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VOLUME 39, NO. 10

AMERICAN DYESTUFF REPORTER

DEVOTED TO TEXTILE CHEMISTRY · BLEACHING · DYEING · PRINTING · FINISHING

5-22

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Vat Colors
for cotton shirtings

For the best in all-round fastness properties—use vat colors. Du Pont vats are suitable for all types of application. They're available in a wide range of shades for printing, duplex printing and over-printing—and for dyeing. They have the same fastness whether applied to yarn or piece goods.

Du Pont offers Ponsol*—anthraquinone-type dyes—and Leucosol*—specially prepared anthraquinone types for printing. Our Technical Staff will assist in solving your problems. E. I. du Pont de Nemours & Co. (Inc.), Dyestuffs Division, Wilmington 98, Delaware.

*REG. U. S. PAT. OFF.

Du Pont Dyestuffs

DU PONT
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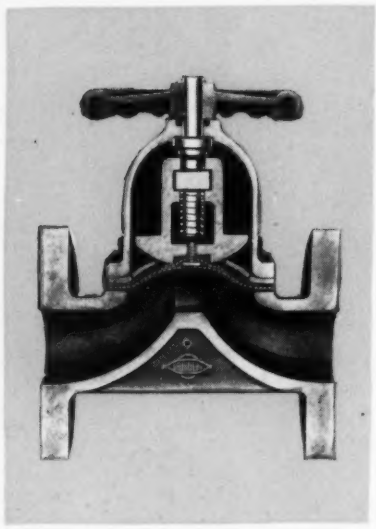
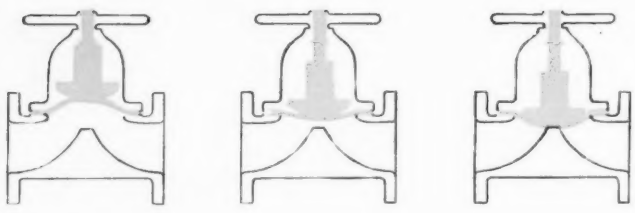
BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

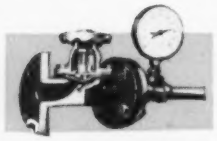


If you need a diaphragm valve you need all the advantages of diaphragm closing



Check these popular features of

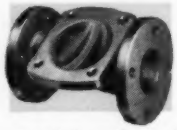
GRINNELL-SAUNDERS DIAPHRAGM VALVES



Diaphragm gives leak-tight closure against grit, scale, solid matter . . . Even when something as substantial as an 8-penny nail is trapped on the weir of a rubber lined valve, as illustrated, the resilient diaphragm, plus the large area of contact, gives leak-tight closure against pressure or vacuum.

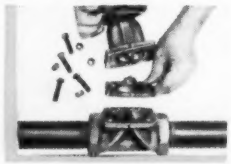
Diaphragm lifts high for streamlined flow in either direction . . . Smooth, streamlined passage, without pockets, prevents trapping of sludge and reduces frictional resistance to a minimum—irrespective of direction of fluid flow. No disc holder in fluid stream. Grinnell-Saunders Diaphragm Valves are self-draining when installed with the spindle at 15 degrees above the horizontal position.

Diaphragm absolutely isolates working parts from fluid . . . There's no "if" about the way a continuous, one-piece diaphragm seals off the working parts from fluids; no perforation or puncture in the diaphragm where fluid or gas can possibly leak by the valve spindle. No sticking, clogging or corroding of working parts. Valve lubricant cannot contaminate the fluid in the line.



Diaphragm, body and lining materials to meet particular conditions . . . Bodies stocked in cast iron, malleable iron, stainless steel, bronze and aluminum: other materials on special orders. Valve bodies lined with lead, glass, natural rubber or neoprene. Diaphragm materials of natural rubber or synthetics. Working pressure, 150 lbs.; maximum temperature, 180 °F.

Diaphragm is only part that normally wears and needs replacement . . . Depending on the type of service, it may last for years, particularly since the compressor and finger plate combine to support the diaphragm in all positions. The diaphragm can be replaced quickly without removing valve from line. No refacing or reseating. No disc holder to require tightening or replacing. No packing glands to demand attention.



Write today for the new Grinnell-Saunders Diaphragm Valve Catalog 4-S.

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Grinnell Company, Inc., Providence 1, R. I. Warehouses: Atlanta • Buffalo • Charlotte • Chicago • Cleveland • Cranston • Fresno • Kansas City • Houston • Long Beach Los Angeles • Milwaukee • Minneapolis • New York • Oakland • Philadelphia • Pocatello • Sacramento • St. Louis • St. Paul • San Francisco • Seattle • Spokane

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A NEW Textile Utility
Product of
Wide Application

with NEW Depuma*

AN ODORLESS, VISCOUS EMULSION . . .
FOR DYE LIQUORS AND PRINT PASTES

Here at last is the more effective, more efficient anti-foaming agent you've been looking for!

PRINT PASTES: Unlike ordinary de-foaming agents, **DEPUMA does not emulsify** when added to acid or alkaline liquors or print pastes. It has **no rate of evaporation.** When stirred in, it slowly rises to the surface, breaking the foam with amazing effectiveness. When added to print pastes, it does not affect the viscosity, thus preventing undesirable penetration during the printing operation.

SOAPING: DEPUMA also permits the use of larger amounts of detergents in soapers when desirable. Added to special, high-concentration soaping liquors, it breaks the foam **without interfering with the** detergent qualities. **DEPUMA prevents re-foaming of the liquor.**

For detailed information on this new and important addition to the A.A.P. range of superior textile auxiliaries, consult our nearest branch. A.A.P. technicians are always happy to be of service.

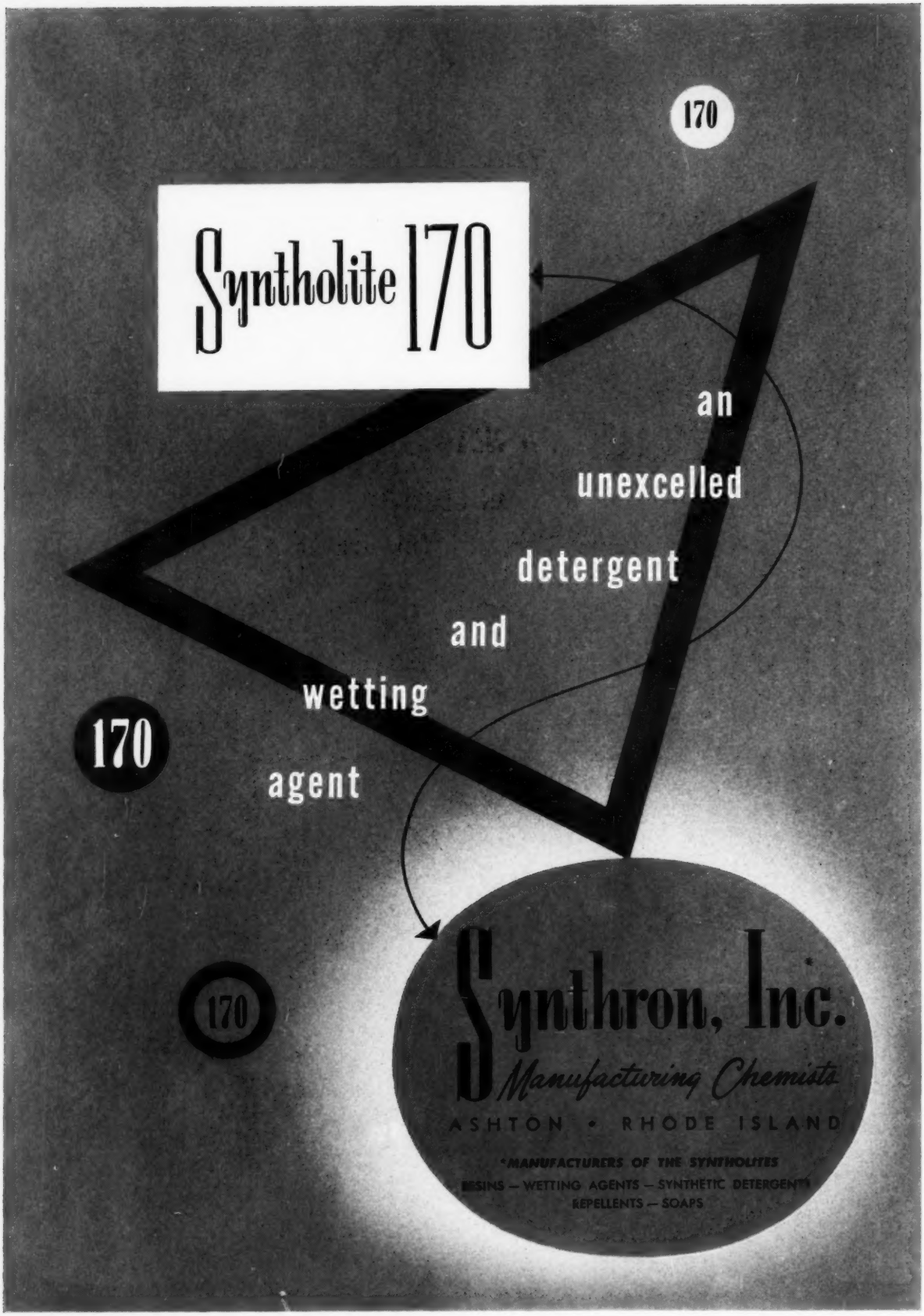
AMERICAN ANILINE PRODUCTS, INC.

50 Union Square, New York, N. Y. • **Plant: Lock Haven, Pa.**

Branches: Boston, Mass. • Providence, R. I. • Philadelphia, Pa. Charlotte, N. C. • Chicago, Ill. • Los Angeles, Cal. • Chattanooga, Tenn.

Dominion Anilines & Chemicals Ltd. • Toronto, Canada • Montreal, Canada

*Reg. U. S. Pat. Off.


170
Syntholite 170
an
unexcelled
detergent
and
wetting
agent
170
170
Synthron, Inc.
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ASHTON • RHODE ISLAND
*MANUFACTURERS OF THE SYNTHOLITES
RESINS — WETTING AGENTS — SYNTHETIC DETERGENTS
REPELLENTS — SOAPS

For the colors that do most to stimulate sales

always specify *National Aniline Dyes*

NATIONAL ANILINE DIVISION

ALLIED CHEMICAL AND DYE CORPORATION

40 RECTOR STREET, NEW YORK 6, N. Y.

Boston Providence Philadelphia Chicago
San Francisco Portland, Ore. Greensboro Charlotte
Richmond Columbus, Ga. Atlanta New Orleans
Chattanooga Toronto

Photograph courtesy Celanese Corporation of America. Yarn content: Warp — Celanese acetate rayon dull filament; Filling—Celanese acetate rayon bright staple.

A DURABLE GAS-FADING INHIBITOR

ARIPERM P M

Gives fabrics composed partially or wholly of

Acetate Rayon

— lasting protection against fading from atmospheric gases

— with excellent resistance to *WASHING AND DRY CLEANING*

Recommended for dyeing Light Shades, Pastels & Tints as well as medium and heavy shades.

With Ariperm P M there is no appreciable yellowing effect on white goods when exposed in the gas chamber—relatively little effect on light fastness of the color.

Simple application in scouring or directly in the dye bath.

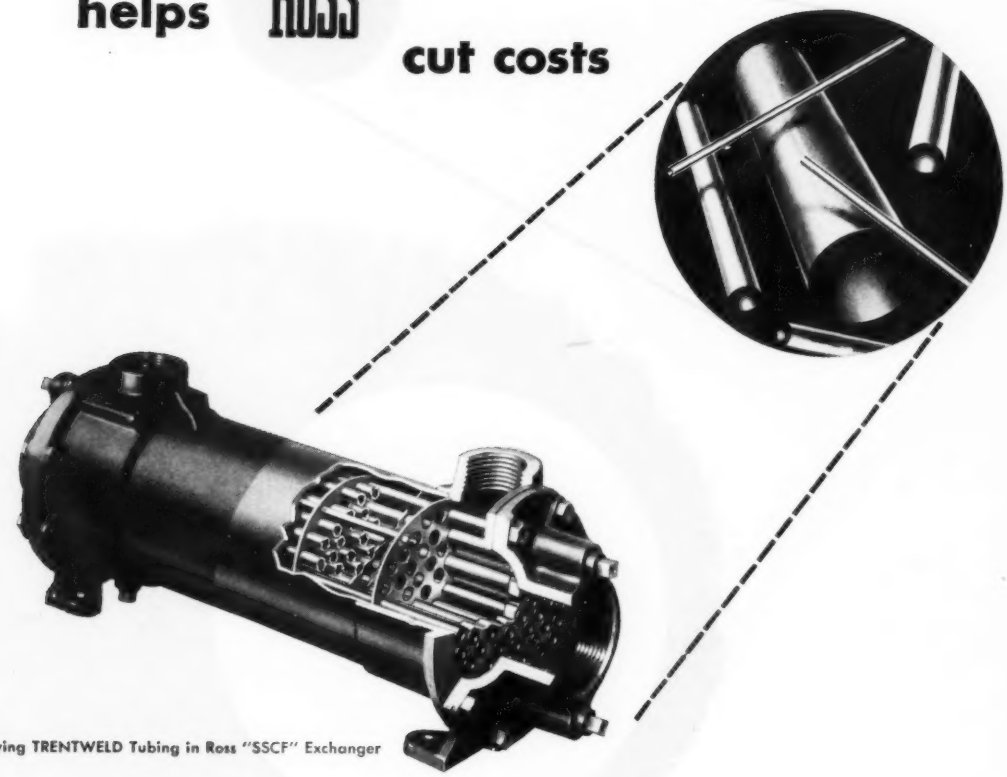
Write for Technical Service Bulletin #201-121.1

Arkansas Co. INC.

NEWARK, NEW JERSEY

TRENTWELD TUBING

helps ROSS cut costs



Cutaway showing TRENTWELD Tubing in Ross "SSCF" Exchanger

The new Ross "SSCF" Exchanger, engineered and manufactured by Ross Heater and Mfg. Company, Inc., Buffalo, N. Y. is a low-cost, all stainless steel, exchanger. It is significant that in this interesting development TRENTWELD was included among the important components: TRENTWELD Large Diameter Tubing forms the shell, while the condenser tubes are TRENTWELD Full Finished.

More and more manufacturers are looking to TRENTWELD for the answer to their stainless steel tubing application problems. That's because TRENTWELD is made in a *tube* mill by *tube* engineers . . . who roll and weld stainless and high alloy tubing exclusively.

Our staff of metallurgists and engineers can help you apply stainless steel tubing to your equipment—better! Try TRENTWELD! One call from you puts our years of experience at your call.

TRENT TUBE COMPANY
subsidiary of Crucible Steel Company of America
General offices and plant: East Troy, Wisconsin
Sales office: Chicago — 4501 West Cortland
New York — Chrysler Building

TRENTWELD

STAINLESS STEEL TUBING

It Pays to Buy Your Chlorobenzenes

from HOOKER

As one of the leading producers of Chlorobenzenes, Hooker offers many advantages to you. Rigid processing standards assure you of uniformly high quality products. Ample manufacturing facilities assure prompt deliveries to meet your most exacting production schedules. As specialists we have a wide fund of technical knowledge of uses and applications that many purchasers have found most helpful. We invite you to test Hooker Chlorobenzenes. Please request samples and literature on your business letterhead.

ORTHODICHLOROBENZENE — $C_6H_4Cl_2$

Tech.(1,2-dichlorobenzene)

DESCRIPTION:
Clear, colorless liquid with characteristic odor. Completely miscible with most organic solvents—practically immiscible in water.

PHYSICAL DATA:

Mol. Wt.	147
F.R.	−10° to −22°C
B.R.	6° includ. 179°C
Sp. Gr., 15.5°/15.5°C.	1.310±.005
R.I., n20/D	1.550±.001
Flash Point	79°C

USES:
Solvent for gum, resins, tars, rubber, greases, sulfur; degreasing of metals, leather and wool; manufacture of dye intermediates; insecticide for domestic purposes; ingredient of paint and tar removers; heat transfer medium for condensing vapor systems.

PARADICHLOROBENZENE — $C_6H_4Cl_2$

(1,4-dichlorobenzene)

DESCRIPTION:
White to clear, transparent crystals with a pleasant aromatic odor. Soluble in most organic solvents; insoluble in water. Available in seven regular sizes.

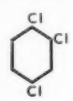
PHYSICAL DATA:

Mol. Wt.	147
M.P.	53°C
B.P.	173°C
Flash Point	73°C
Fire Point	108°C

USES:
Recommended and widely accepted as a highly effective insecticide for agricultural and domestic purposes. Also used in the manufacture of sanitary specialties such as deodorants. As a chemical intermediate in the preparation of such chemicals as dyestuffs.

1, 2, 4-TRICHLOROBENZENE — $C_6H_3Cl_3$

Tech.



DESCRIPTION:
Clear, almost colorless mobile liquid having a characteristic chlorobenzene odor. Completely miscible with most organic solvents; practically immiscible in water.

PHYSICAL DATA:

Mol. Wt.	181.5
F.P.	10°C
Dist. R.	205° to 235°C
Sp. Gr., 15.5°/15.5°C.	1.465±.003
R.I., n20/D	1.570±.002
Flash Point	118°C

USES:
As an insecticide, it is particularly effective as a soil poison in termite eradication; solvent for fats, oils, waxes, resins; as a heat transfer medium, in chemical synthesis for manufacture of dye intermediates and other organic chemicals.

MONOCHLOROBENZENE — C_6H_5Cl

(phenyl chloride)

DESCRIPTION:
Clear, colorless, moderately volatile liquid, with a characteristic mild odor. Completely miscible with most organic solvents; immiscible with water.

PHYSICAL DATA:

Mol. Wt.	112.5
F.P.	−44°C
B.R.	131.3° to 132.3°C
Sp. Gr., 15.5°/15.5°C.	1.113±.001
R.I., n20/D	1.524
Flash Point	29°C

USES:
Intermediate in manufacture of insecticides, dyestuffs, drugs, perfumes, and other organic chemicals; solvent for paints, varnishes, lacquers; general organic solvent; heat transfer medium for condensing vapor systems.

From the Salt of the Earth

HOOKER ELECTROCHEMICAL COMPANY

2 FORTY-SEVENTH ST., NIAGARA FALLS, N. Y.

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SODIUM SULFIDE • SODIUM SULFHYDRATE • SODIUM BENZOATE • CAUSTIC SODA • MURIATIC ACID • PARADICHLOROBENZENE • CHLORINE

KELTEX

...the modern print paste thickener

For CLEAN-EDGED PRINTING ... TRUE and EVEN COLOR VALUES ... on tie materials printed with acid, direct and acetate colors on acetate, viscose, wool and pure silk goods.

KELTEX as your thickening agent gives you all of these important advantages:

- ...No cooking or special treatment
- ...Readily soluble in cold water
- ...Easily washed out after printing
- ...Free from grit and cellulose—needs no filtering or straining
- ...Exact and uniform printing paste viscosity
- ...Clean, sharp printing
- ...Maximum color penetration
- ...True, even color yield
- ...Economical to use

KELTEX® ... a product of KELCO COMPANY

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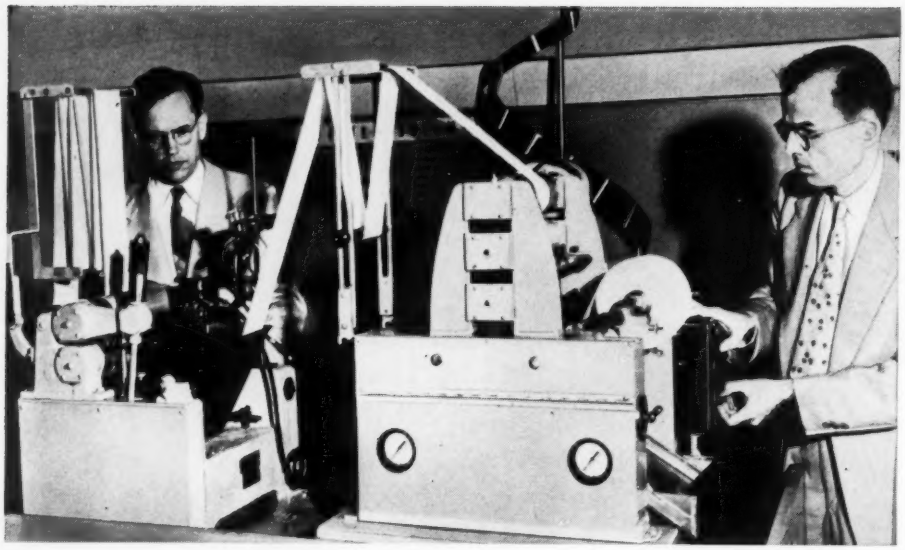


Continuous dyeing unit used in dye research at the laboratories of Calco Chemical Division, American Cyanamid Co., Bound Brook, N. J. The pad box, in the unit at left, is made of corrosion-resistant Inconel.

CALCO LAB STUDIES SHOW *INCONEL* BEST FOR HANDLING DYE SOLUTIONS

"We have used Inconel . . . and consider it the best material we know of for preventing discoloration or metal pickup in dyeing . . .

"Previous tests on dyes by our metallurgists have shown that Inconel has less effect on the dye product than any other material we have tried except glass."

The quotation above is from a report made by the metallurgist of the Calco Chemical Division, American Cyanamid Company at Bound Brook, New Jersey.

In well-equipped laboratories, Calco research men are constantly studying the many complex problems of dye production and use. To facilitate these studies, ingeniously-designed laboratory equipment simulates actual production methods. Included in this equipment is apparatus for continuous dyeing, which permits studies of color matching, shade changes, and ideal dye bath composition.

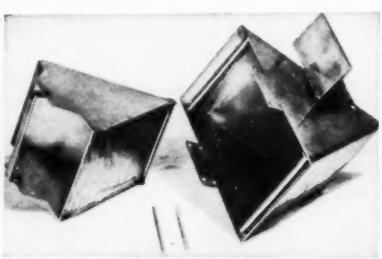
In developing this equipment, Calco designers had to overcome certain problems in materials selection . . . especially for the vital pad box which contains the dye solutions. In their own words: *"We wanted particularly to obtain freedom from rust contamination and iron pickup, since these adversely affect the shade of some dyes."*

Pad boxes made of Inconel® solved this problem to Calco's satisfaction. But that is not surprising, for Inconel is highly resistant to corrosion by most textile dyestuffs.

Still other advantages . . . Inconel can be readily fabricated . . . can be welded, brazed, or soldered. Welds in Inconel are as fully corrosion-resistant as the parent alloy itself.

Inconel is easy to buy, too. Your nearest Inco distributor stocks it in all standard mill forms.

Write, today, for full engineering information and sources of supply. Remember, too, that our Technical Service Department is always ready to help you solve application problems.



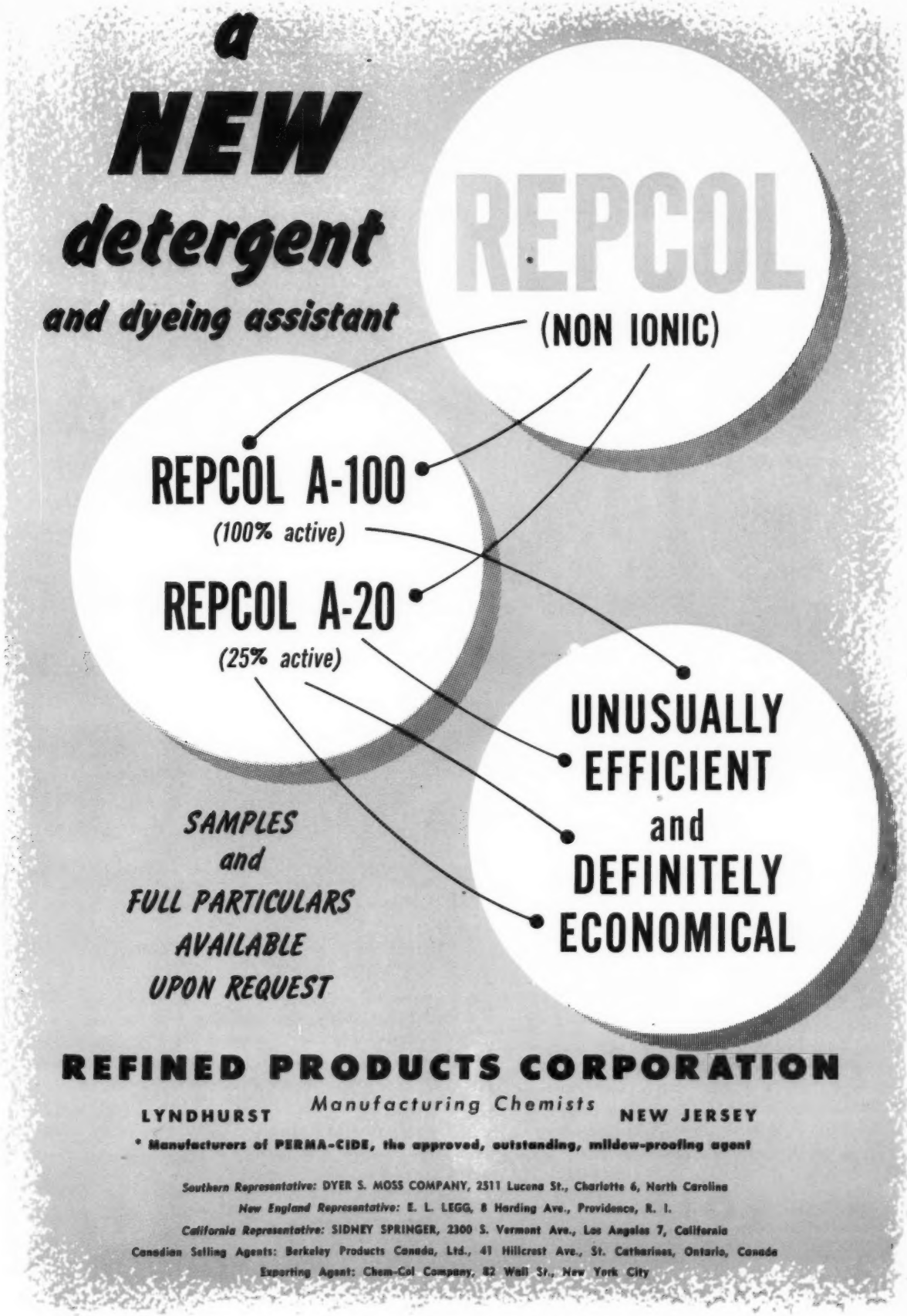
Component parts of a pad box, used in continuous dyeing apparatus at Calco Chemicals Division laboratories. They are made of Inconel to minimize metal pickup and stop rust-fouling of dye solutions.

EMBLEM OF SERVICE

NICKEL INCO TRADE MARK **ALLOYS**

MONEL® • "K"® MONEL • "R"® MONEL • "KR"® MONEL
INCONEL® • NICKEL • "D"® NICKEL • "L"® NICKEL
DURANICKEL® • PERMANICKEL® • INCONEL "X"®

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.



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* Manufacturers of PERMA-CIDE, the approved, outstanding, mildew-proofing agent

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Exporting Agent: Chem-Col Company, 82 Wall St., New York City

YOU CAN SEE WHY

Wyandotte "high-light" Kreelon leaves no residue

Textile fibers can absorb appreciable amounts of certain detergents which cannot be removed by ordinary rinsing. Also any insoluble material introduced in the processing bath may remain in the fibers.

This residue affects the handle of the fabric. It may affect subsequent finishing operations, alter colors and produce odors.

That's why it's a good idea to use Wyandotte "high-light" Kreelon. This superior detergent dissolves more quickly, is more soluble than most other detergents, and forms no insoluble water hardness complexes. It makes a clear, water-white solution. These qualities may be strikingly demonstrated by dissolving samples of Kreelon and other detergents in separate beakers of water — and holding them up to the light. Note the clarity of the Kreelon solution. Compare it with the hazy, "muddy" appearance of the other detergent solutions.

Kreelon is strongly recommended for textile scouring, dyeing and bleaching operations. It provides excellent detergent, wetting, penetrating, and rinsing properties in hard and soft water, in alkaline and acid media. Its performance is guaranteed by a three-way control test. Write us today for complete data on the properties and applications of Wyandotte "high-light" Kreelon.

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SODA ASH • CAUSTIC SODA • BICARBONATE OF SODA
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Vat Paste Preparation is

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— **With AMBERTEX M**, National's liquid starch concentrate! You simply blend this ready-to-use thickener with chemicals and water

And in 30 minutes your paste is ready! In fact, it's so simple you no longer need cooking apparatus — cooling coils — storage tanks — steam — or 4 to 5 hours preparation time!

AMBERTEX pastes are *pre-controlled* for viscosity and stability. They deliver higher color yields. Especially effective with Rapidogen, Vat, and Acetate colors — also for white discharge. Smooth, uniform blotches. Soft pliable films that protect delicate fabrics — rinse out in a jiffy!

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We'd like to test these NATIONAL Textile Specialties and Starches:

- ☐ Please send test samples
- ☐ Have a representative call
- ☐ AMBERTEX M (described above)
- ☐ SPUNJEL for spun rayon sizing
- ☐ FLOTEX to replace natural printing gums
- ☐ TABLE ADHESIVE for screen printing
- ☐ FLOCK ADHESIVE 970 for chenille printing
- ☐ FARILON for Rapidogen printing and backfilling
- ☐ CLEARFILM for bright, lustrous finishes on cotton and rayons
- ☐ VAT THICKENER 36 for rayon and cotton

Mr. _____

Company _____

Address _____

City _____ Zone ____ State ____

LOOK AHEAD TO

The Finished Fabric

WHEN YOU CHOOSE YOUR WOOL OIL!

It's easy to underestimate the importance of the job a wool oil performs in your mill. Probably because the application of the oil is such a relatively simple operation.

But you'll never underestimate a wool oil's importance if you look ahead to the contributions it makes to every succeeding operation— from picking through finishing. For a good wool oil, properly applied, can take many of the kinks out of carding, spinning, knitting, storing, finishing and dyeing.

In fact, that's exactly what Proxol is already accomplishing in many important woolen mills in this country.

You'll get some new ideas on the meaning of top-notch performance when you check Proxol results.

Today—when smooth, trouble-free production is so vital—you owe it to yourself to give Proxol a thorough test. Do it now!

Procter & Gamble
Cincinnati, Ohio

CHECK THESE 6 PROXOL ADVANTAGES:

Stable Emulsions—easily applied

Increased Carding Efficiency—less waste, less fibre breakage, less static, no corrosion.

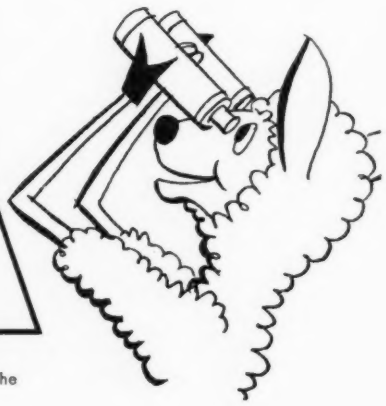
Increased Spinning Efficiency—fewer ends down.

Stronger, more uniform yarns

No Change in Storage—no heating in the bin, no odor or discoloration.

Easy Scouring—regardless of storage period—assurance of level piece dyeing.

PROCTER & GAMBLE
PROXOL
MADE IN U.S.A.



Proxol is made by the makers of Olate, the industry's leading, all-purpose textile soap

IGEPONS

speed textile processing

IGEPONS
are used in every
phase of textile
wet processing:
Scouring
Wetting out
Degumming
Kier boiling
Dye levelling
Dye pasting
Chlorine and
peroxide bleaching
Fulling
Lime soap inhibiting
and dispersing
Finishing

IGEPONS are the ideal scouring, wetting-out, penetrating and level dyeing agents for all fibers and fabrics.

IGEPONS are stable in acid and alkaline solutions—have excellent detergent properties—rinse rapidly—disperse lime soap and are equally effective in hard or soft water at any temperature.

IGEPONS have high efficiency in low concentrations and save time and labor.

Our nearest office will be glad to furnish samples and technical information. Your inquiries will receive careful and prompt attention.

OTHER GDC PRODUCTS:

IGEPALS — non-ionic detergents
NEKALS — wetting agents
SOROMINES — softening agents
BLANCOPHORS — optical brighteners
NULLAPONS — organic sequestering agents
COLLORESINES — thickening agents
EULANS — mothproofing agents
EMULPHORS — emulsifiers
PREVENTOLS — fungicides

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NOPCO* 1656-R

THE ONE

Worsted Lubricant That ELIMINATES STATIC

Application: Top or Pin Drafter

Write for Details

NOPCO TRADEMARK EVOLVED THRU RESEARCH

NOPCO CHEMICAL COMPANY

Formerly National Oil Products Company

HARRISON, NEW JERSEY

Branches: Boston • Chicago • Cedartown, Ga. • Richmond, Calif.

*T. M. Reg. U. S. Pat. Off.

NEW! BRILLIANT! FAST!

Aridye
Pigment discharge colors

Yes... Interchemical now introduces an exclusive new line of *Pigment Discharge Colors* that give you all the well-known brilliance of "silk" colors, *plus* all-round fastness!

With these new discharge colors you can produce bright blues, royals, yellows, greens, aquas, pinks, many other shades... *all with eye-appeal and buy-appeal*... on rayon, spun rayon, and other fabrics.

Aridye Discharge Color prints are fast to washing, drycleaning, perspiration, and light. They give fine, sharp marks... smooth, opaque prints ... with no impairment of the hand. Colors now available include two blues, a green, a yellow, and a red. Others under development.

These new colors are applied as pigmented water-in-oil emulsions by the usual discharge printing method. They may be used to produce both self shades and combination shades and can be printed with vat dyes and pigment whites to obtain unusual, striking color combinations.

This is another example of the many research-born developments of Interchemical's Textile Colors Division—all dedicated to the solution of *your* color problems. For further details on Aridye Pigment Discharge Colors, mail the coupon today.

Aridye® **Interchem®** *Dyes*
Pigment colors

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become an integral part of the fiber on viscose, bemberg, acetate and cotton goods. The many intriguing and sales-stimulating finishes available with the Onyxsans, ranging in hand from the satin softness of a baby's skin to the mellow smoothness of printed draperies, are *permanent*. Even on other textiles you get outstanding resistance to washing.

Write for this Bulletin

Bulletin TX-1 covers the Onyxsans, their properties, applications and advantages—in complete detail.

*Trade Mark Reg. U. S. Pat. Off.

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LIXATE BRINE IMPROVES QUALITY OF DYEING

To improve the quality of finished goods by eliminating spots, streaks, and white edges many mills now use saturated Lixate brine in the dye bath instead of dry salt.

When dry salt is added it has a tendency to create areas of concentrated brine around the grains of salt, and these drive excessive quantities of dye into fabrics and cause spots and streaks. Because Lixate brine disperses evenly and immediately through the bath, it helps to eliminate this difficulty and to produce a smooth exhaustion of the dye.

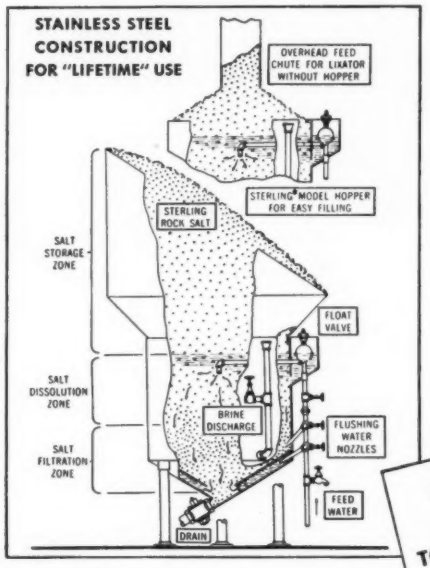
Results at mills that have recently changed from dry salt to Lixate brine indicate that in addition to helping to eliminate re-dyes and achieve greater uniformity of shades, use of Lixate brine also increases plant efficiency and reduces operating costs as well. Because brine is made automatically and piped throughout the plant, the Lixator cuts salt consumption, and also eliminates the work of unnecessary salt handling.

An engineering development of the International Salt Company, Inc., Scranton, Pa., the Lixator consists of a rock salt storage hopper over a dissolving tank with a brine collection chamber. Rock salt flows by gravity into the tank at the same rate it is dissolved, automatically replenishing the supply. Water enters near the top. As water flows downward, it dissolves the rock salt until it becomes fully saturated some distance from the bottom of the tank. From that point on the remaining rock salt acts as a filter bed that removes all insoluble matter from the brine. As a result, when it reaches the collection chamber, the brine is crystal clear and fully saturated.

Many mills report that when they use Lixate brine in the dye bath they use approximately 12 per cent less salt than they did when they added dry salt to the bath. This is because saturated brine is more efficient as the exhausting agent than when dry salt is used directly in the machines. One gallon of saturated brine contains 2.65 pounds of salt but when used as the exhausting agent, one gallon of saturated brine appears to be equivalent to three pounds of dry salt. This is the figure used for best dyeing results by actual experience.

Lixate brine is always crystal clear and neutral—free from acids and alkalies—and for that reason is also used to regenerate zeolite water softeners. The same Lixator provides saturated brine for this purpose as well as for use in the dye vats. Lixators may be made in any size to meet individual plant requirements.

SALT! WHY HAUL IT? MEASURE IT? STIR IT?



Just Turn It On!

STERLING ROCK SALT
BRINE DELIVERED BY PIPE TO EVERY POINT IN YOUR PLANT
- DYEING MACHINES
- DYEING VATS
- ZEOLITE WATER SOFTENERS

HOW LIXATOR WORKS

In the dissolution zone – flowing through a bed of Sterling Rock Salt which is continuously replenished by gravity feed, water dissolves salt to form 100% saturated brine. **In the filtration zone** – through use of the **self-filtration** principle **originated by International,** the saturated brine is thoroughly filtered through a bed of undissolved rock salt. The rock salt itself filters the brine. Nothing else is needed.

WHAT THE LIXATOR PROVIDES

- ✓ **Chemical and bacterial purity to meet the most exacting standards for brine.**
- ✓ **Unvarying salt content of 2.65 pounds per gallon of brine.**
- ✓ **Crystal-clear brine.**
- ✓ **Continuous supply of brine.**
- ✓ **Automatic salt and water feed to Lixator.**
- ✓ **Inexpensive, rapid distribution of brine to points of use by pump and piping.**

Savings up to 20% and often more in the cost and handling of salt have been reported by many Lixate users. Why not investigate?

• You can eliminate shoveling, hauling, and laborious hand stirring of salt and water, and frequent testing of the brine strength—with International's Lixate Process for Making Brine. Stops waste through spilling. Saves time and labor. Assures accurate salt measurement.

• The Lixator *automatically* produces 100% saturated, free flowing, crystal-clear brine — which may be piped to as many points in your plant as you desire — any distance away – by either gravity or pump. YOU SIMPLY TURN A VALVE for self-filtered, LIXATE Brine that meets the most exacting chemical and bacterial standards.

An INTERNATIONAL Exclusive

The **LIXATE*** *Process*

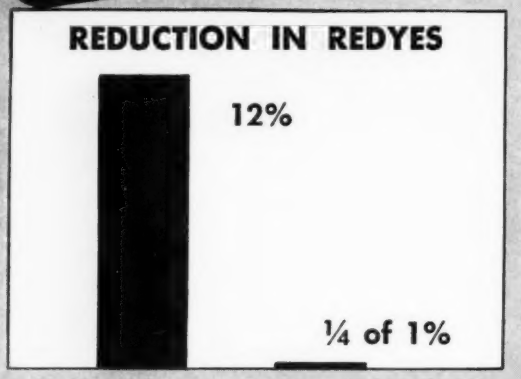
FOR MAKING BRINE

*REG. U. S. PAT. OFF.

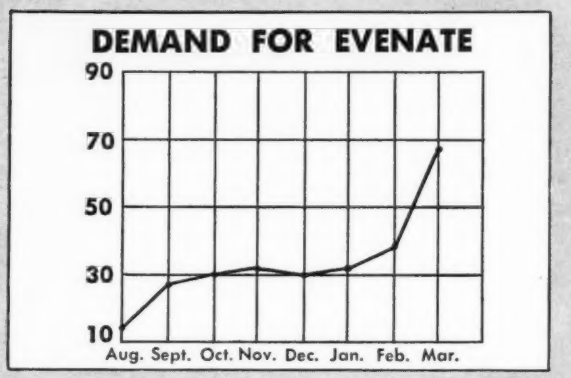
INTERNATIONAL SALT COMPANY, INC., Scranton, Pa.

Redyes are Reduced with *Evenate

*Evenate is a thin paste readily soluble in the dyebath. It is a non-ionic condensate combined with a glyceride.



Based on actual dyehouse operation



Sales up 500% Aug. 1949 to March 1950

Here is the amazing new dyeing assistant which is working miracles in the hosiery dyehouse. Check these results achieved on Nylon hosiery with Evenate in the dyebath:

(1) Redyes reduced from 12% to ¼ of 1% — the customers' figures, not ours.
(2) Better control of dyebath.
(3) Better unions between leg and welt.
(4) Better penetration.

Demand for Evenate is up 500% since August 1949. Evenate works equally well with acid colors and acetate dyes. Evenate reduces shade, maintaining union without stripping.

When redyeing becomes necessary, it can be done economically with Evenate. Evenate will reduce the number of shade variations in mixed dye lots.

Try Evenate in your production. Let us give you full details.

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Research shows differences between Catalyst AC and DAP in Resin finishing

Part of Monsanto's continuing research for more efficient, less expensive catalyst for urea and melamine resins has turned up several fundamental differences in the way Catalyst AC and Diammonium Phosphate work. Several of these differences are apparent in this simple experiment you can perform in your own laboratory.

TEST METHOD

Place equal quantities of concentrated urea resin solutions in watch glasses or foil cups.

Add 5% (on weight of resin solids) Catalyst AC to one sample, 3% DAP to other.

Evaporate both to dryness on hot plate.

With DAP—Resin soon starts to solidify, appears as white crystals in solution.

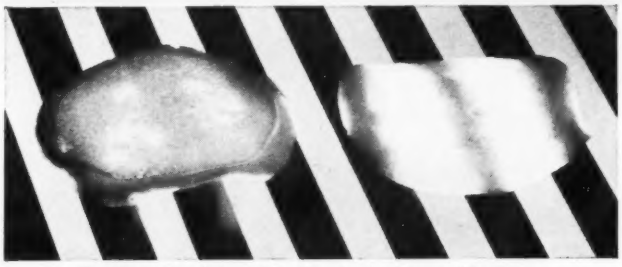
With Catalyst AC—Resin remains in solution until mixture is practically dry.

Cure both 15 minutes at 300° F. in oven.

Examine dried and cured discs.

With DAP—Disc appears as frosty, porous cake.

With Catalyst AC—Disc is translucent glassy, solid.



Break up discs into water, allow to stand several hours.

Measure pH both solutions.

With DAP—pH 2.9 (average).

With Catalyst AC—pH 4.8 (average).

Make both alkaline with soda ash solution.

Note odor.

With DAP—Fishy, amine odor, plus formaldehyde odor.

With Catalyst AC—Formaldehyde odor only.

Conclusions: Assuming that the resin solutions behave the same way on cloth as they do in the watch glass, it is apparent that DAP causes resin to solidify into discrete particles during the drying operation, i.e., at the same time wet, swollen, rayon fiber is shrinking back to size. When Catalyst AC is used, the resin remains in solution until the fiber shrinks around it. This means that there is a greater area of intimate contact — and possibly more complete reaction — between the resin and the fiber. This difference in behavior might parallel the differences between pigments and dyestuffs.

The higher pH of AC-Catalyzed solutions means that there is less likelihood of fiber damage and, more important, less likelihood of the resin's decomposing into odorous amines. Eliminating this possibility and eliminating the formation of odors when the solution is made alkaline means that Catalyst AC removes two of the possible sources of odor.

Test slasher screens new synthetic sizes before mill trials

This new pilot plant slasher rounds out the number of tests which Monsanto's textile labs run on new synthetic resins submitted by other Monsanto laboratories for consideration as sizes. The slasher saves time and labor at the mill by limiting trials to the most promising of the materials.

The slasher is designed to size from one to 300 ends at speeds of zero to 15 yards a minute and with a stretch up to 10%. Sized yarns can then be tested for tensile strength, elongation and size content. They can be examined microscopically in cross-section to determine size penetration. Abrasion studies are carried out on a cohesion tester, single-end yarn abrader, and the dynamic heddle abrasion tester.

The slasher consists of a size box, immersion roll, squeeze rolls, five drying cans, lease rods, reed and take-up beam.

Rx FOR THE BLUES

for Navy Blues

PHARMASOLS*

Blue G
Blue GB

for Bright Blues

INDIGOSOL*

Blue IBC

*Reg. U.S. Pat. Off.

These azoic colors, for printing cotton, linen or rayon, produce Navy Blue of good fastness at a low cost. In combination with the Pharmasol Yellows they produce deep Browns.

Pharmasols are stabilized solutions, adjusted to the most practical concentration, which can be easily applied with a maximum of efficiency.

Pharmasols do not decompose and thereby overcome the problems of troublesome dissolving.

The outstanding soluble vat color for producing bright Blues in any depth, of excellent fastness, is Indigosol Blue IBC. It is suitable for dyeing, padding and printing on cotton, linen or rayon (excepting acetate fibers) where maximum fastness is required.

Indigosol Blue IBC is an important member of the group of very fast Indigosols, all of which are readily soluble and easily developed.

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MAY 15, 1950
VOLUME 39 NUMBER 10

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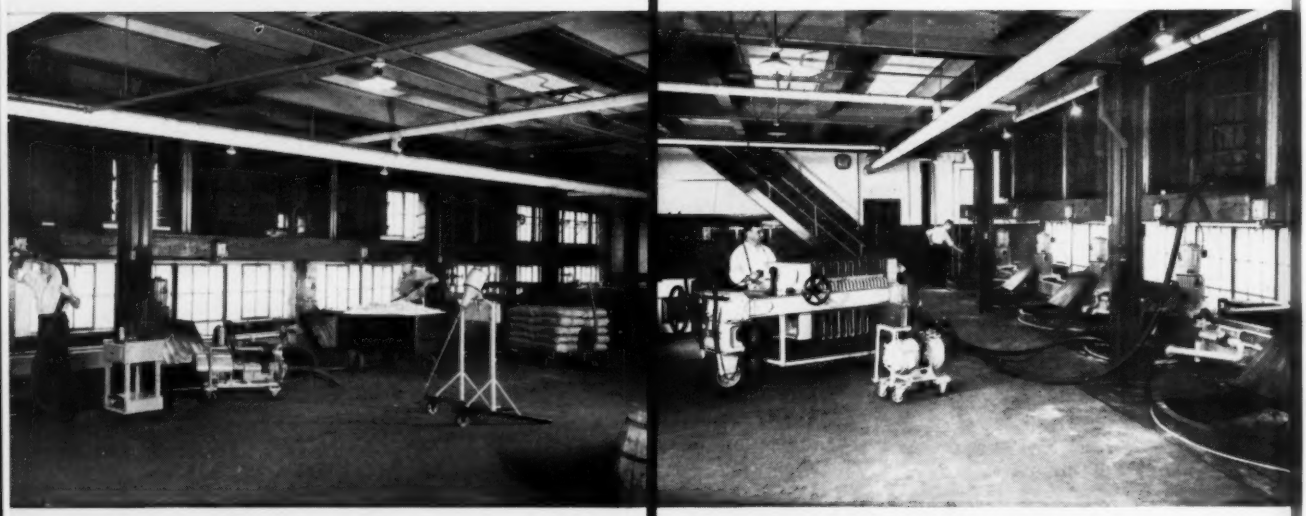

pace-setter in precision dye-making

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VOLUME 39 MAY 15, 1950 NUMBER 10

A PROPOSED CHANGE IN THE A.A.T.C.C. TEST METHOD FOR REWETTING AGENTS

CARL R. BLUMENSTEIN

Seydel-Woolley & Co.

A series of experiments has demonstrated that the A.A.T.C.C. Test Method for Rewetting Agents will give widely varying results if impregnation of the test swatches is done at different temperatures. Swatches impregnated at 70°C. show a much greater rewetting speed than swatches impregnated at the specified temperature of 20°C. Many rewetters that show up very poorly at the 20°C. impregnation, show improvement of several hundred percent in the rewetting speed when impregnated at 70°C. The effects of conditioning, aging, added starch and weighters, and test-droplet size upon the rewetting speed were also studied. The author proposed that the A.A.T.C.C. Test Method be changed to 70°C. impregnations, as this would be more in line with plant practice.

Introduction

DURING the course of running several series of rewetting tests there was noted a high degree of discrepancy in the results of these tests as conducted according to the A.A.T.C.C. Test Method for Rewetting Agents *(1)*. Consequently, further investigation was conducted to determine the effects of certain variables upon the results of these tests. The effects under study were the following:

(1) Temperature effect of the impregnating bath
(2) Effect due to the presence of starch and weighters
(3) Effect of different weight and construction of the test swatches
(3) Effect of droplet size upon different types of test swatches
(5) Aging and conditioning effects upon the test swatches after impregnation

Experimental

The testing for rewetting properties of certain proprietary textile finishes was conducted according to the regular A.A.T.C.C. Test Method for Rewetting Agents, as noted above, with the exception of the variables introduced. It is not necessary to go into a technical description of this test as it has been adequately described by Draves in the literature *(1)*. The compounds tested were chosen to represent five broad classes of compounds that are customarily used as textile finishes and Sanforizing aids. Four products were selected for each class of compounds tested. These classes were the following: petroleum sulfonates and blends thereof; alkylaryl-sulfonates; sulfonated-ester type; sulfonated-vegetable-oil type and blends thereof; nonionic type. The cloth used for the tests (except as noted in (3) of the introduction) was a 44-inch, 107 x 56, 1.35 cotton twill in the grey. All tests were run at a concentration of 1 per cent of the agent under test. The first sets of these tests were run as follows:

Series 1—Regular A.A.T.C.C. Method with impregnating bath at 20°C.

Series 2—Same as (1) except that the bath was maintained at 70°C. during the impregnation of the test swatches

Series 3—Same as (2), but having added to the solution 5 per cent of a 90F. corn starch

Series 4—Same as (3), but using in place of the starch a commercial weighter, which consists essentially of China clay, inorganic salts, starch, dextrine, and urea.

These tests were lettered from A through T inclusive, and the results thereof are to be found in Table I.

A second set of tests was then run in which the compound under test was the same throughout, but the type and construction of the cloth used for the test swatches varied. The compound selected was the same as that used in "A," Table I. This compound, a mineral-oil sulfonate, was selected because of its present popularity as a finishing and sanforizing oil. A concentration of 1 per cent was again selected. The effect of temperature of im-

TABLE I

Results of Tests on 44-inch, 107 x 56, 1.35 Cotton Twill

	Compound	Test	Pick-Up (Wet)	Average Seconds Wetting: 1 Hr. out of Oven	24 Hrs. at 70° F. 65% r.h.	24 Hrs. in Desiccator	2 Weeks
A	Petroleum Mahogany Sulfonate—Mineral Oil Blend	1	70	42.8	63.4	65.0	32.0
		2	65	6.6	10.6	6.2	7.0
		3	75	2.0	4.6	3.0	2.0
		4	72	1.6	2.4	2.0	2.0
B	Petroleum Mahogany Sulfonate (Oil Soluble) 70%	1	71	11.0	17.8	18.2	15.0
		2	67	2.0	1.8	1.6	2.0
		3	75	1.0	3.2	1.2	<1.0
		4	70	1.2	1.4	1.0	<1.0
C	Petroleum Mahogany Sulfonate (Water Soluble) 85%	1	70	8.6	12.8	11.0	8.0
		2	68	1.0	1.4	1.2	2.0
		3	78	<1.0	1.4	1.6	<1.0
		4	74	<1.0	<1.0	<1.0	<1.0
D	Paraffinic Hydrocarbon Sulfonate (Reed Process) 80%	1	69	70.6	66.0	74.0	62.0
		2	68	3.4	5.0	2.8	3.0
		3	74	2.6	12.0	3.6	5.0
		4	75	1.0	2.8	2.6	1.0
E	Dodecyl Benzene Sulfonate 35%	1	68	40.2	57.0	51.0	35.0
		2	67	2.8	3.4	2.4	3.0
		3	75	1.6	2.4	2.8	2.0
		4	74	<1.0	<1.0	<1.0	<1.0
F	Alkyl Aryl Sulfonate 40%	1	70	33.8	53.2	63.4	43.0
		2	68	1.0	1.0	1.0	1.0
		3	77	1.0	2.2	3.0	2.0
		4	70	1.0	<1.0	<1.0	<1.0
G	Alky Aryl Sulfonate 30%	1	71	35.2	66.4	63.4	39.0
		2	66	4.2	4.2	2.2	3.0
		3	72	6.4	11.6	7.6	8.0
		4	72	<1.0	<1.0	<1.0	<1.0
H	"Keryl" Benzene Sulfonate 40%	1	70	19.6	25.8	18.4	21.0
		2	68	<1.0	1.0	1.0	<1.0
		3	77	<1.0	1.6	1.2	<1.2
		4	73	<1.0	<1.0	<1.0	<1.0
I	Sulfonated Propyl Oleate (A) 65%	1	70	6.2	8.8	8.0	9.0
		2	69	<1.0	<1.0	<1.0	<1.0
		3	78	1.6	2.0	3.0	3.0
		4	72	<1.0	<1.0	<1.0	<1.0
J	Sulfonated Propyl Oleate (B) 75%	1	69	15.0	28.0	27.0	37.0
		2	68	1.0	2.0	1.0	2.0
		3	70	2.4	5.4	4.0	5.0
		4	70	<1.0	<1.0	<1.0	<1.0
K	Di-Alkyl Sulfo-Succinate 85%	1	70	<1.0	<1.0	<1.0	<1.0
		2	68	<1.0	<1.0	<1.0	<1.0
		3	78	<1.0	1.6	<1.0	<1.0
		4	67	<1.0	<1.0	<1.0	<1.0
L	Sulfonated Butyl Oleate Blend 45%	1	69	15.6	24.4	23.0	29.0
		2	69	1.0	1.2	1.0	1.0
		3	75	1.0	1.4	1.6	2.0
		4	72	<1.0	<1.0	1.0	1.0
M	Sulfonated Castor Oil 75%	1	67	44.6	73.6	72.2	75.0
		2	67	4.4	6.6	4.8	12.0
		3	73	3.6	6.0	7.6	16.0
		4	70	6.2	18.4	15.8	17.0
N	Sulfonated Vegetable —Mineral Oil Blend	1	70	42.6	80.0	80.0	87.0
		2	69	3.0	4.0	2.4	3.0
		3	77	2.0	3.6	3.2	3.0
		4	69	1.8	2.4	2.4	3.0
O	Sulfonated Peanut Oil 65%	1	69	64.2	111.0	126.0	73.0
		2	66	5.0	7.8	5.8	8.0
		3	71	4.8	8.0	7.0	8.0
		4	68	2.4	2.8	3.2	3.0
P	Sulfonated Corn Oil 72%	1	70	21.8	39.2	63.8	39.0
		2	67	3.0	3.4	2.2	4.0
		3	72	2.0	3.4	4.0	5.0
		4	69	3.2	7.0	6.2	6.0
Q	Ethylene Oxide Condensate of Octyl Thio-Phenol 100%	1	69	14.2	11.0	20.2	33.0
		2	65	<1.0	<1.0	<1.0	<1.0
		3	74	<1.0	<1.0	<1.0	<1.0
		4	71	<1.0	<1.0	<1.0	<1.0
R	Polyglycol Ester of Lauric Acid 100%	1	69	20.6	38.0	44.0	62.0
		2	72	3.0	3.0	5.2	12.0
		3	76	1.2	1.8	2.0	5.0
		4	70	4.8	10.6	7.2	17.2
S	Ethylene Oxide Fatty Acid Condensate 100%	1	69	8.6	27.6	15.6	21.0
		2	70	1.0	1.0	1.2	2.0
		3	76	1.0	2.2	1.6	2.0
		4	70	<1.0	3.2	3.2	3.0
T	Coco Acids Diethanolamine Condensate 100%	1	66	6.2	9.8	8.0	10.0
		2	67	<1.0	<1.0	<1.0	<1.0
		3	80	<1.0	<1.0	<1.0	<1.0
		4	70	<1.0	<1.0	<1.0	<1.0

Key to Tests Impregnation Temp.

1 20° C.
2 70° C.
3 70° C. plus 5% 90F starch
4 70° C. plus 5% weighter

pregnating bath, as Series 1 and Series 2 above, was studied, along with the effect of cloth type. The cloth used in these tests varied from a lightweight sheeting to a twill similar to the one used in the first set of tests, except that it was from another manufacturer. All cloth was of cotton in the grey. These tests are lettered from U through Z inclusive and are tabulated in Table II. Test A from Table I is included at the bottom of Table II for comparative purposes.

A third set of tests was run in which the droplet, the absorbency of which was being measured, was only one third the size used in the other tests above, viz., the droplet size was 60 drops per ml., as compared with 20 drops per ml. from a standard 50-ml. Kimble laboratory buret. This small droplet size was achieved by slipping a small capillary tip over the regular tip of the buret and holding it in place by means of a short connector of rubber tubing. These subnormal-sized droplets were used to test the rewetting of the lightweight cloth tested above. This was done because it was found that the lightweight goods did not have the absorbing capacity of the heavier goods, that is to say, the same volume of water had to cover a larger area in the case of the lighter goods in order to be completely absorbed. These tests were run on the same cloth samples as tabulated in Table II. The results of this set of tests are tabulated in Table III.

Simultaneously with the above tests were noted the effects of aging, controlled humidity, and desiccation upon the test swatches. A large-sized desiccator was used to hold one series of the test swatches in a dry state after being removed from the drying oven. An air-conditioned room at 70°F. and 65 per cent r.h. was used to condition another series of test swatches after they had been dried. The swatches were aged for two weeks in normal atmosphere with daily variations of temperature and humidity. As can be seen from Tables I and II, the rewetting time was also measured one hour after the cloth sample had been removed from the drying oven, as well as after the 24 hours of desiccation or conditioning.

Some incidental tests that arose in the process of the investigation are to be briefly mentioned. The results of these tests are to be found tabulated in Table IV, and are for the most part self-explanatory. The effect of drying the test swatches at 110°C. rather than at the specified oven temperature of 80°C. was studied (Test 1). It might be added at this point that the testing was done with the same compound and cloth as used in Test A, Table I. Also found in Table IV, Test 2 shows the effect of drying a test swatch by means of a hot flat iron, rather than in the oven, after having been impregnated at 20°C., as per A.A.T.C.C. Method. Test 3 is the same as Test 2, except that the sample swatch was impregnated at 70°C. Test 4 (Table IV) shows the result of a rewetting test on a test swatch that was rinsed in hot water, dried, conditioned, and then tested according to the regular A.A.T.C.C. Method. Test 5 shows the result of rewetting tests on a test swatch that was *rippled* very vigorously between the hands to break down and *soften* the fabric. The swatch was then given the regular A.A.T.C.C. test.

Discussion

From Tables I, II and III it is very apparent that the temperature of the impreg-

nating bath exerts a powerful influence upon the rewetting speed. In every instance the rewetting speed of the test swatches impregnated at 70°C. was many times faster than the counterpart impregnated at the specified temperature of 20°C. This difference in rewetting speed is not due to a higher percent of pick-up of impregnating solution, as can be seen from the wet pick-up figures in Tables I and II. In fact, Table V shows the dry weights of the swatches after impregnation show a loss in weight in every instance, this loss in weight being greater on the average for the swatches impregnated at 70°C. than for those impregnated at 20°C. In other words, some of the sizing in the grey goods was being washed out, and more so at the higher temperature. It is not the purpose of this paper to theorize why this rewetting phenomenon should take place as it does. It suffices to show that the temperature of the impregnating bath can be a very critical factor in the rewetting test. Compounds that show up very badly as rewetters when impregnated at 20°C., as for instance compounds A, D, E. F. G, M, N and O, give very satisfactory results when impregnated at 70°C. The fact that some of these compounds are in use as Sanforizing aids is an indication that they must *work*.

It is also to be noted that in general, and let us emphasize *in general*, that the effect of a weighter of the China-clay type gives a higher rewetting speed, as can be readily seen from Table I, Series 4. This can also be said to a certain extent of the addition of starch, although the observations are by no means as consistent as in the case of the China-clay weighter. All of these tests were, of course, for an impregnation temperature of 70°C. and must be compared on this basis.

Another interesting observation is the fact that compounds E, F, G, H, I, J, K, L, Q, R, S, and T (Table I) are all excellent wetting agents when tested by the Draves test. They are also excellent rewetting agents. On the other hand, many of the good rewetters in our table do not fall into the above group, and are no good as wetting agents. This is particularly true of the petroleum sulfonates, A, B, and C.

The effect of humidity during aging, although noticeable, is not a very great factor in the rewetting speed, in light of the other startling observations. There is an ever-so-slight indication that the desiccated samples are slightly faster rewetters than the samples conditioned at 65 per cent r.h. In fact, the effect of overnight conditioning is so slight, that, for comparative tests when speedy results are required, the rewetting figures after one hour out of the oven are satisfactory for most purposes.

The effects of aging the sample swatches for two weeks do not show any particular trend. Some of the compounds lost a little of their rewetting speed upon aging, while others improved slightly. It is to be noted that the degree of gain or loss of the rewetting speed bears the same relationship for any particular compound for comparisons of impregnations at 70°C. and 20°C. However, it may be said that in the cases where there is a slight change on aging for two weeks, those swatches impregnated at 20°C. show a slightly greater degree of change than those impregnated at 70°C. In any event, the effects are not of too great significance.

It is very important that the same cloth be used for all rewetting tests. The rewetting tests are of a relative nature only; hence, in order to get comparable results when testing different rewetting agents, the same cloth should be used. Cloth will differ as to size content, the type of size, the method of weaving, the grade of raw cotton used in the cloth, etc. Table II shows the results of rewetting tests run on different weights and constructions of cloth. Some of the samples of cloth types, as in Tests U, W, Y, and Z, show very close agreement, although they differ greatly in weight and construction, for impregnations at 70°C. The agreement is not so good for impregnation at 20°C. One might add that the compound tested on these different cloths was the petroleum sulfonate-mineral oil blend used in Test A (Table I), the results of Test A being included in Table II for comparison. It is significant to point out that the twill used in Test Z showed much closer agreement between the tests with impregnation at 20°C. and at 70°C. than did the twill used in Test A (the same twill used for all the tests in Table I).

Table III shows the results of using a droplet size of only 1/3 the size of the normal droplet. As was to be expected, the

TABLE II

Results of Tests on Different Types of Cloth
Petroleum Mahogany Sulfonate—Mineral Oil Blend

	Cloth Type	Test	% Pick-Up (Wet)	Average Seconds Wetting** 1 Hr. out of Oven	24 Hrs. at 70° F. 65% r.h.	24 Hrs. in Desiccator	2 Weeks
U	Cotton Bagging, 40"—56 x 48—4.30	1	94	42.2	41.0	36.2	32.0
		2	91	15.2	16.0	17.6	11.0
V	Cotton Sheeting, 39"—68 x 72—4.75	1	85	87.0	88.2	89.0	81.0
		2	84	39.8	45.0	38.2	32.0
W	Cotton Broad Cloth 40"—132 x 60—3.50	1	81	20.0	34.6	26.0	18.0
		2	84	12.0	15.2	14.6	12.0
X	Cotton Chambray 40"—66 x 48—4.00	1	90	41.6	56.0	52.8	45.0
		2	92	31.6	45.0	35.6	32.0
Y	Mattress Ticking 56"—96 x 46—1.14	1	76	39.4	39.8	36.8	21.0
		2	76	13.0	15.4	14.0	12.0
Z	Cotton Twill 30"—114 x 60—1.95	1	66	26.0	37.0	27.0	18.0
		2	67	11.4	14.2	15.2	7.0
A	Cotton Twill* 44"—107 x 56—1.35	1	70	42.8	63.4	65.0	32.0
		2	65	0.6	10.6	6.2	7.0

* Test A, Table I
** Drop Size: 20/ml

Key to Tests
Impregnation Temp.
1 — 20° C.
2 — 70° C.

TABLE III

Results of Tests Using Different Sized Droplets

Cloth Types (Same as Table II)	Test	Average Seconds Wetting 24 Hrs., 70°F., 65% r.h. Drop: 20/ml.	24 Hrs., 70°F., 65% r.h. Drop: 60/ml.	2 Weeks Drop: 20/ml.	2 Weeks Drop: 60/ml.
U Bagging	1	41.0	20.2	32.0	18.0
	2	16.0	6.2	11.0	4.0
V Sheeting	1	88.2	39.6	81.0	17.0
	2	45.0	19.6	32.0	10.0
W Broad Cloth	1	34.6	11.6	18.0	12.0
	2	15.2	5.6	12.0	5.0
X Chambray	1	56.0	34.8	52.8	32.0
	2	45.0	16.6	35.6	19.0
Y Ticking	1	39.8	16.4	21.0	15.0
	2	15.4	5.4	12.0	4.0
Z Twill	1	37.2	16.3	18.0	12.6
	2	14.2	6.9	7.0	5.4
A Twill (Test A, Table I)	1	63.4	40.2	32.0	18.0
	2	10.6	6.8	7.0	6.2

Key to Tests
Impregnation Temp.
1 ..... 20°C.
2 ..... 70°C.

TABLE IV

Results of Miscellaneous Tests
Variations on Test A, Table I

Procedure—Variation	*% Pick-up (Wet)*	*Average Seconds Wetting after 24 Hrs., 70°F., 65% r.h.*	*Results of Same Test, Table I*
1 Regular A.A.T.C.C. Procedure Sample Oven Dried at 110°C.....	68	65.2	63.4
2 Regular A.A.T.C.C. Procedure Sample Ironed Dry	67	94.6	63.4
3 Same as above, but impregnated at 70°C.	67	16.4	10.6
4 Regular A.A.T.C.C. Procedure Sample rinsed in hot water before impregnation	68	51.6	63.4
5 Regular A.A.T.C.C. Procedure Sample "Broken"	70	37.4	63.4

rewetting time is greatly decreased using the smaller droplet. In general, the smaller droplet decreases the rewetting time in all the tests, but it is significant that the amount of decrease is greater in proportion with the lighter weight goods than with the twill. In fact, the use of a smaller droplet in most instances brings the results of the lighter weight goods in line with the results on the twills. This may be explained on the basis that the lightweight goods have as great an absorptive ability from a qualitative standpoint as do the heavier goods, but because of their light construction their absorbency is limited. Whereas heavy goods can absorb a large drop of water over a relatively small area, for the same droplet to be absorbed by lightweight goods a much greater area has to be covered. Such factors as frictional drag, etc. therefore play a proportionately greater role in these instances. It is to be noted also that Tests V and X for sheeting and chambray, respectively, have a relatively high rewetting time, even for the smaller-sized droplet. This may be due to a different type of size finish on these cloths.

Table IV shows the results of some tests that were run to clear up some obvious questions that might arise from the above studies. In Test I the swatch was treated as Test A1, Table I, but oven-dried at 110°C. instead of the specified temperature of 80°C. As can be seen from the results, there is not much change of significance. In Test 2, the swatch was treated again as Test A1, Table I, but this time instead of oven-drying, the swatch was dried by means of a hot flat iron. The results, as compared to Test A1, show a very significant increase in the rewetting time. In Test 3, the same iron drying procedure as Test 2 was employed, but this time it was conducted as Test A2, Table I, that is, impregnation at 70°C. in place of the specified 20°C. Here, too, a noticeable increase in rewetting time occurred. In Test 4, the swatch was first rinsed in hot water, dried, conditioned again, and then treated as Test A1, Table I. This time a small drop in rewetting speed took place. In Test 5 the cloth was thoroughly rippled and broken between the hands to soften the fabric and loosen the weave. The cloth was then treated as Test A1, Table I, that is by the regular A.A.T.C.C. Method with impregnation at 20°C. As can be seen from the results the rewetting time was almost cut in half. These tests all indicate that the surface of the cloth plays a great part in the rewetting speed. Ironing the cloth dry seems to make it slick and glossy, which has a deleterious effect upon the rewetting speed. Softening and breaking the cloth appears to open the fiber and to make it more absorbent. It may well be that, by impregnating the cloth at 70°C. in place of 20°C. the textile oil or finishing agent has a greater softening effect upon the fibers, or else is able to cut through the surface film of the fibers more effectively to leave them more absorbent. But as stated before, we shall not attempt to theorize why the rewetting speed is so much faster with swatches impregnated at the higher temperature.

TABLE V

Per Cent Pick-Up, Dry Basis, of Sample Swatches, 20°C. and 70°C. Impregnation

Sample	*% Pick-up*	*Sample*	*% Pick-up*	*Sample*	*% Pick-up*
A 1.....	0	H 1	—1	O 1	—2
2.....	—2	2	—2	2	—4
B 1.....	0	I 1	—1	P 1	—1
2.....	—4	2	—3	2	—4
C 1.....	—2	J 1	—3	Q 1	—2
2.....	—3	2	—4	2	—4
D 1.....	—1	K 1	—1	R 1	—2
2.....	—2	2	—4	2	—3
E 1.....	—2	L 1	—2	S 1	—3
2.....	—3	2	—4	2	—3
F 1.....	—1	M 1	—2	T 1	—2
2.....	—3	2	—4	2	—3
G 1.....	—2	N 1	—2		
2.....	—3	2	—4		

Test 1—20°C. Impregnation: Average = —1.60
Test 1—70°C. Impregnation: Average = —3.30

Conclusion

The results of the above series of tests clearly indicate that certain factors, such as temperature of the impregnating bath, type of cloth, droplet size, etc. all play a part in the results obtainable in the rewetting test for Sanforizing agents. Variations of several hundred percent in the rewetting speed of a compound under test can be obtained when running the impregnations at 70°C. as compared with impregnations at 20°C. A particular type of cloth should be selected, preferably a heavy twill, and all tests should be run on this particular cloth when a series of compounds is tested for rewetting properties. When and if for some particular reason a light-weight goods is selected for rewetting tests, it is preferred to modify the tip of the buret in some fashion so that the droplet size is greatly reduced in order to bring the results of the rewetting tests more in line with results obtainable on heavier goods.

The effects of conditioning a treated sample swatch in a standard atmosphere for 24 hours are so slight that this treatment can well be dispensed with if rapid results are desired. In fact, it is proposed that tests be run one hour after the sample has been removed from the drying oven. For most purposes the accuracy is great enough.

In view of the results of these experiments it is proposed that the A.A.T.C.C. Test Method for Rewetting Agents be modified so that all future impregnations of test swatches be conducted at 70°C., rather than at the present 20°C. It is the belief that this would be a step in the right direction, in view of the fact that a hot bath is generally used in plant practice.

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(1) A.A.T.C.C., Technical Manual and Yearbook, p. 146, "Rewetting Agents—Tentative Test Method 27-44".

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Hudson-Mohawk Section—

APPLICATION OF NAPHTHOLS*

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The application of naphthols on cotton and rayon and the relationship of naphthol substantivity to methods of application and equipment are discussed. It is explained how good penetration and good rubbing fastness in naphthol dyeing can be obtained by consideration of the factors of quality of water, quality of salt, and proper soaping subsequent to coupling. The use of naphthols for acetate and nylon is reported.

TONIGHT I shall talk about naphthols; I shall discuss the uses and properties of naphthol dyeings and the relationship of naphthol substantivity to the methods and equipment employed for application. The extension of the use of naphthols to other fibers will also be mentioned.

The naphthols have assumed an important place in the finishing of cotton and rayon textiles because naphthol dyeings are characterized by excellent wet fastness, by good to excellent light fastness, by economy for very deep shades and by great brightness. The brightness and economy of naphthols first became important for those colors where the vat dyes are weakest in these respects, that is, for deep reds, scarlets and wines. Simplicity and economy of application for deep shades and the availability of colors from other parts of the dyer's spectrum, including yellows, oranges, greens, blues, Bordeauxs, browns and blacks, have greatly broadened the usefulness of naphthols in cotton and rayon finishing. And more recently the application of naphthols to newer fibers, especially nylon and acetate, has further increased the importance of the naphthols.

TYPES OF NAPHTHOLS — Before taking up the application of Naphthols in detail, I should like first to consider the types of naphthols that are available, as the choice of naphthol is important with respect to the method of dyeing and the equipment that can be employed for application. The naphthols can be divided broadly into two groups with respect to their dyeing properties: namely, the substantive and the nonsubstantive types. The substantive naphthols include AS-SW, AS-LC, AS-LB, AS-DB, AS-GR, AS-SG and AS-LG. These substantive naphthols are particularly suitable for application in equipment that permits salt rinsing after naphtholation and before coupling, such as jigs, dyebecks and circulating machines. The substantive naphthols are thus economically employed in equipment where a batch method of dyeing is required. They are suitable also for continuous dyeing. The nonsubstantive naphthols, on the other hand, do not have very much affinity for the fiber and must therefore be applied continuously for complete utilization of naphthol to attain the economy characteristic of the naphthols. The following compromise the nonsubstantive naphthols: AS, AS-MX, AS-D, AS-OL, AS-PH, AS-RL, AS-BG, AS-BS, AS-BO, AS-E, AS-G, and AS-LT. Two naphthols that constitute a small in-between group with respect to substantivity are Naphthol AS-TR and Naphthol AS-ITR. Although these two naphthols do not exhaust very well, they nevertheless do stay on the fiber well enough to permit salt rinsing for application by batch methods.

Application

JIG DYEING — For the application of naphthols to piece goods in jigs, the substantive types, as already explained, are normally employed as they have sufficient affinity for the fiber to stand salt rinsing. The material before application of naphthol is scoured with a synthetic detergent and soda ash over two ends to give it the required absorbency; the scouring liquor is dropped and the material is given a warm rinse. The naphthol is separately dissolved with alkali according to the specific formula recommended for the particular naphthol and is added over the first and second ends to the jig, which contains warm water that has already been sharpened with caustic soda. Although naphtholating liquor is best warm —not over 120°F.—at the beginning to ensure better penetration, it should be allowed to cool off during naphtholation, inasmuch as a naphthol has much better affinity from a cool than from a hot bath. Salt is added over the third and fourth ends to effect exhaustion. It is often advantageous to shell the material on the third end to ensure better penetration in the case of heavy materials. After the fourth end the naphtholating liquor is dropped, and the material is given a salt rinse in fresh, cold, salt solution. Coupling is carried out with a fast color salt in a cold fresh bath. Three fourths of the dissolved fast color salt is added over the first end and the balance on the second end. Coupling is continued for a total of six ends.

If the material that is to be jig-dyed has been previously scoured, impregnated with rewetting agent and dried, it is then possible to enter the cloth dry. In such a case the jig is filled with 80 to 90 gallons of water at a starting temperature of 160°F. This procedure of using dry cloth containing a wetting agent for naphthol impregnation in a jig not only eliminates the two ends usually required to wet out the material, but experience has shown that it gives better crock fastness in the final dyeing.

DYEBECK—Substantive naphthols are also employed for application to piece goods in a dyebeck without particular difficulty. The general procedure is the same in principle as on the jig, that is, the cloth is first scoured and rinsed. The dyebath is set with the necessary amount of caustic soda at a temperature of 120°F., and, while the machine is running, the dissolved naphthol is slowly added. Naphtholation is continued for 10 minutes longer in a cooling bath. Exhaustion is effected with salt in the usual manner in 15 to 20 minutes. After the naphtholating bath has been dropped, the material is salt-rinsed for 10 minutes. In preparing the salt-rinsing bath, it is advisable to dissolve the salt and to add it to the machine before the water is turned on so that salt water, and not plain water, comes in contact with the cloth in the kettle.

The same general procedure is followed in coupling, that is, salt is added to the kettle before the water. While the machine is running, the dissolved fast color salt is then added and coupling is continued for 20 to 30 minutes. The material is finally given a cold rinse and after-

* Presented before Hudson-Mohawk Section in Utica, N. Y., on March 24, 1950.

treated or soaped in the manner to be described later.

PACKAGE DYEING—For dyeing packages in circulating machines, which likewise must be salt-rinsed, again substantive naphthols must be employed. The yarn is first wet out or scoured with a synthetic detergent and soda ash at 190°F. to 200°F. It is then rinsed warm and the dyebath is set at 110°F. The necessary amount of caustic soda is added to the dyebath, then the separately dissolved naphthol is added and naphtholation is carried on for 10 minutes. Salt is again employed for exhaustion. The salt should be added in two portions since a concentrated addition may cause the naphthol to precipitate. This is especially true of Naphthol AS-SW. After the addition of salt, naphtholation is continued for 20 minutes longer. The naphtholating bath is then dropped and the yarn is salt-rinsed for 10 minutes cold. After a salt rinse, the dyed naphthol is coupled cold for 30 minutes, rinsed with cold water and thoroughly soaped.

In the application of naphthols to packages it is very advantageous to employ softly wound packages so that the naphtholating liquor can be added without prewetting the packages; the naphthol liquor itself has good wetting properties. In this procedure naphtholation is best started at 140°F. and is continued in a cooling bath as usual. A further advantage of this method, besides the saving of time for wetting out, is that much better rubbing fastness can be expected.

Up to this point I have discussed the dyeing of naphthols in jig, kettle, and circulating machine without mentioning the amounts of caustic soda and salt necessary for the various steps. All of the naphthols when dyed in full shade require three pounds of caustic soda flakes per 100 gallons of naphtholating liquor, except Naphthol AS-SG, which requires four pounds. If lighter shades are dyed, the amount of caustic soda can be reduced to 2 lbs. per 100 gallons of naphtholating liquor, but never to a still lower figure except for the yellow naphthols, such as Naphthol AS-G and AS-LG, for which the amount of caustic soda can be reduced to 1 lb. per 100 gallons of naphtholating liquor.

A good grade of common salt should be used to exhaust and to salt-rinse the naphthols since we have found that common salt containing calcium and magnesium, as is sometimes the case, causes precipitation of naphthol. Anhydrous sodium sulfate, often erroneously called Glauber's salt, is always free of calcium and magnesium and can therefore be used to advantage in the application of naphthols if there is any question about the purity of the common salt available. To exhaust naphthols, 2 ozs. of common salt or anhydrous sodium sulfate per gallon is sufficient. An excessive amount of salt causes precipitation of naphthol and poor crock fastness. In salt rinsing, 4 ozs. per gallon is generally recommended.

PADDING—the padding of naphthols may involve more variation. If a plant is equipped with a hot flue, the normal procedure would be to pad a nonsubstantive naphthol onto the piece goods and then to dry the naphtholated material. The dried naphthol in the goods can be coupled either on a padder followed by skying, on a Williams Unit or in a pad-steam unit. If a plant is not equipped for hot-flue drying, substantive naphthols are employed, since the material can then be padded, carried to the jig, salt-rinsed and coupled.

WATER—We are all aware that hard water, or water containing calcium and magnesium, is detrimental to dyeing, especially to naphthol dyeing, since calcium and magnesium combine with naphthols to form insoluble calcium or magnesium naphtholates, which then precipitate on the material. Lately we have encountered another factor that also gives considerable trouble in regards to crock fastness, and that is iron in water. Tests have shown that the iron content of the water increases during a dry spell when rivers and reservoirs are running low. If water contains iron, it is necessary to sequester the iron with a stable sequestering agent before satisfactory dyeings can be obtained. Furthermore, it is just as important to use such an agent in salt-rinsing and coupling baths to get good rubbing fastness when iron, calcium or magnesium is present in water as it is important to use it in the naphtholating and soaping baths. In other words, an organic sequestering agent should be used wherever water containing iron, calcium, or magnesium comes in contact with naphthol or naphtholated material.

AFTERTREATMENT — Aftertreatment of naphthol dyeings is necessary to bring out the inherent fastness properties of the naphthols. A naphthol dyeing should be soaped at as high a temperature as is feasible for the longest possible time up to thirty minutes in a bath containing 2 per cent on the weight of the fiber of a synthetic detergent that is especially resistant to calcium, magnesium and iron, 4 per cent of soda ash and 2 per cent of an organic sequestering agent. The synthetic detergent and organic sequestering agent that have proved most satisfactory from among our own products are, respectively, Igepal CA Extra and Nullapon BFC Liquid.

In jig dyeing the temperature of the cloth on the beam is only 170° to 180°F., even when the liquor in the jig is actively boiling. In a jig, therefore, where the roll itself cannot be maintained close to a boiling temperature, it is advisable to continue the aftertreatment for 8 to 10 ends. In the kettle where the cloth is subjected to considerable mechanical action because it is in rope form and where a temperature of 190°F. to 195°F. can be maintained, especially if the kettle is closed, an aftertreatment for 20 to 30 minutes, followed by hot rinses, should produce dyeings with very good crocking fastness. In package dyeing the aftertreatment is somewhat different in that there is no mechanical action on the material, but only a circulation of liquor. In this case it is therefore necessary to aftertreat twice. Each aftertreatment is started cold, brought up to the boil and maintained at the boil for 10 minutes. Hot rinsing follows until the water runs clear.

In continuous dyeing the aftertreatment is usually carried out in two or three hot wash boxes containing 1 to 2 lbs. of synthetic detergent, 2 to 4 lbs. of soda ash and 1 to 2 lbs. of organic sequestering agent per 100 gallons. The material is finally rinsed in two or three more wash boxes containing hot running water.

NYLON—Nylon is usually dyed with acid or acetate dyestuffs. The acid colors as a rule give satisfactory fastness properties, but do not cover barré or warp streaks so common in both knit and woven piece goods. Although the acetate dyes give good coverage and do not show barré, they do not give good wash fastness. By the use of naphthols excellent fastness to washing for bright, deep shades without barré effects can be obtained on nylon. Good to excellent fastness to light is available for dyeings on nylon according to the particular naphthol combination and the depth of the shade.

The procedure for dyeing nylon with naphthols is very different from the procedure for cotton or rayon. Naphthol and color base—not the fast color salt—are applied in the same bath for about 45 minutes and the material is rinsed. Only then is the base diazotized, that is, on the material right in the presence of the naphthol. Rinsing and soaping follow in the usual manner.

ACETATE — the procedure described above for nylon has also given encouraging results in preliminary mill trials on acetate materials. Work thus far has shown that the wet fastness of naphthols on acetate is excellent, or very much better than the wet fastness of acetate dyestuffs. The light fastness is comparable.

Rhode Island Section—

SOME OBSERVATIONS ON CHEMICAL CONSTITUTION VERSUS PRINTING PERFORMANCE AND OTHER PROPERTIES OF VAT DYES*

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Arnold, Hoffman & Co., Inc.

Examination of the structural formulas of those vat dyes that print well shows that there are relations between printing quality and chemical structure. Symmetry, compactness, simplicity and presence of a single quinone system in general promote printing quality. As a rule, the vat dyes that print well also make good leuco sulfate esters.

WHILE a great deal of literature is available on the printing characteristics of vat dyes, very little appears to have been published that would relate the chemical constitution of these dyes to their printing behavior. It is the purpose of this paper to show that such a relationship does exist.

Recently M. R. Fox, in the November 1949 issue of the *Journal of the Society of Dyers and Colourists,* volume 65, pages 508-531, presented a rather comprehensive article entitled "The Relationship Between Chemical Constitution of Vat Dyes and Their Dyeing and Fastness Behavior", but relationship to printing behavior was not discussed.

The observations I wish to make on vat-color printing have been gained from laboratory research and factory production of a number of vat colors. Of prime importance has been the testing of these colors for printing. American printers have very high standards, and the manufacture of vat printing colors is highly competitive. So it is not surprising that much time is spent by dyestuff chemists on research to develop colors with improved printing performance, to find suitable printing assistants, to achieve better physical dispersion, and to exercise careful production control in order to meet the high standards required by printers of vat dyes.

It is well known that certain vat dyes are suitable for printing, while other types, although satisfactory for dyeing and other applications, are not recommended for printing. Since generally the same techniques of dispersion, use of printing assistants, etc. are available for standardizing one color as another, it seems evident that an inherent difference in chemical structure may be responsible for the difference in printing characteristics.

It has been observed *(1)* that "if optimum conditions for each color are obtained, most vat colors are suitable for both dyeing and printing". However, under the practical operating conditions of a print works, the printer cannot afford to resort to a special formulation for each color. Generally it is expected that a standard formulation will be applicable for nearly all colors used. The observations here recorded concerning printing characteristics will be restricted to the typical formulations containing sulfoxylate, potassium carbonate, British gum and glycerine.

In order to establish a relationship between chemical constitution and printing properties the structural formulas of a number of vat dyes will be examined. In many cases the I. G. Farben names are used because of the large volume of information which has become available in recent years from the F.I.A.T. reports on the German dyes.

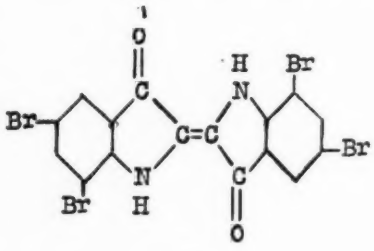

Figure 1
5:7:5':7' Tetrabromoindigo
Ciba Blue 2B

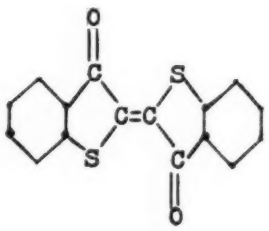

Figure 2
Thioindigo (2,2'Bisthionaphenindigo)

The oldest group of vat dyes is indigo and some of its derivatives. A typical member of this group is Ciba Blue 2B or tetrabromoindigo (Fig. 1). Brilliant Indigo 2B is a dichlorodibromoindigo and an isomer is Brilliant Indigo 4G. Dyes of this series are generally satisfactory for printing as well as for the various dyeing applications. They are limited to blue shades and are considered inferior to the anthraquinone-type vats in fastness properties.

Another important class of vat dyes, generally satisfactory in all textile applications on cellulose fibers, is the thio-

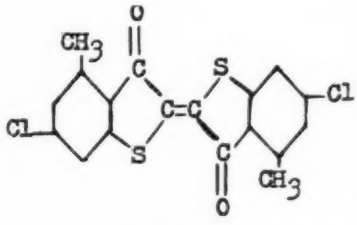

Figure 3
Indanthrene Brilliant Pink R

* Presented before Rhode Island Section in Providence on January 27, 1950.

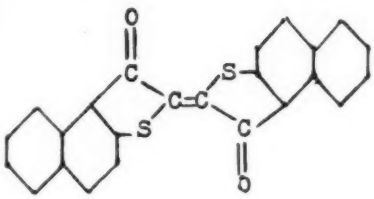

Figure 4
Indanthrene Brown 2R

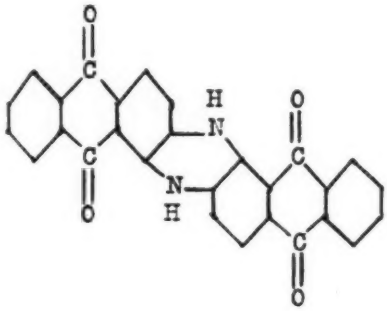

Figure 5
Indanthrone, Indanthrene Blue RS

indigos. The parent member, 2,2'-bisthionaphthenindigo, is Algol Printing Red 5B (Fig. 2). The 6,6'-dichloro-4,4'-dimethyl derivative is Indanthrene Brilliant Pink R (Fig. 3), and the same substituents give Indanthrene Red Violet RH as the 5,5'-dichloro-7,7'-dimethylthioindigo. Algol Orange RF is 6,6'-diethoxythioindigo. In Indanthrene Brown 2R (Fig. 4), the benzene nuclei are replaced by naphthalene. These are good printing colors and some have fastness properties comparable to the anthraquinone vats.

The largest and most important group of vat dyes are the anthraquinone types. Included in this group, however, are several basic types not actually derived from anthraquinone and resembling the true anthraquinone types only in general characteristics. The history of these dyes is considered to begin in 1901 with the discovery by René Bohn of indanthrone, or Vat Blue RS (Fig. 5). This color and its monochloro derivative, Indanthrene Blue GCD, as well as the dichloro compound, Indanthrene Blue BC, are still very widely used today. Here we have two anthraquinone nuclei joined by two nitrogen atoms forming a hydrazine ring. Blue RS and Blue GCD are used in printing, but Blue BC is not considered a satisfactory printing color. This is a border line case of a phenomenon to be noted later that multiple anthraquinonyl systems tend to inhibit printing performance.

Algol Yellow GC (Fig. 6), an anthraquinonedibenzthiazole, is an excellent

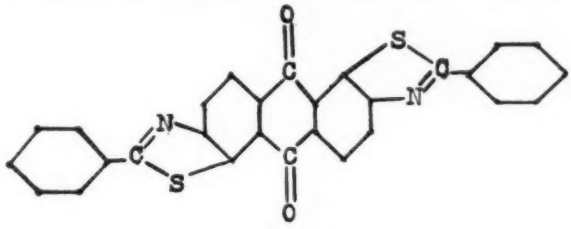

Figure 6
Algol Yellow GC

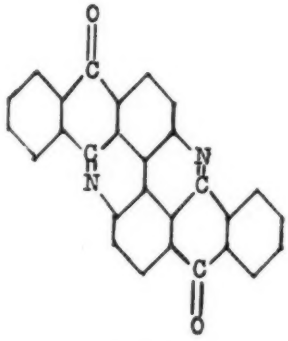

Figure 7
Flavanthron, Indanthrene Yellow G

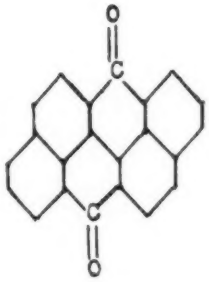

Figure 10
Anthanthrone, Bromination Gives
Indanthrene Brilliant Orange RK

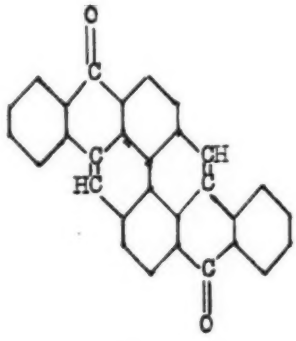

Figure 8
Pyranthron, Indanthrene Golden Orange G

Bromination Gives Indanthrene Orange 2RT

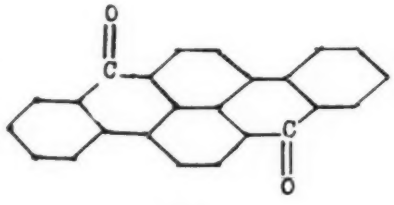

Figure 9
Dibenzpyroquinone, Ahcovat Golden Yellow GK

Bromination Gives Ahcovat Golden Yellow RK

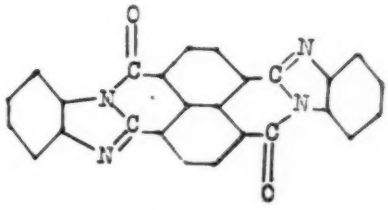

Figure 11
Indanthrene Brilliant Orange GR
(Also Called Indanthrene Scarlet 2G)

printing color. Two other anthraquinone thiazoles, Algol Yellow 2G and 8G, also print well, but have only moderate light fastness.

Another important yellow dye is flavanthrone, Indanthrene Yellow G (Fig. 7). Pyranthrone, or Indanthrene Golden Orange G (Fig. 8), has a similar structure, but with nitrogen atoms replaced by carbon. Here is an example of a vat dye containing only carbon, hydrogen and oxygen. Bromination gives Indanthrene Orange 2RT.

Some of the most important vat dyes with generally excellent over-all performance and fastness characteristics are of highly condensed polybenzenoid ring structure containing only one pair of carbonyl or quinoid groups. Dibenzpyroquinone is Ahcovat Golden Yellow GK (Fig. 9), bromination of which gives Ahcovat Golden Yellow RK.

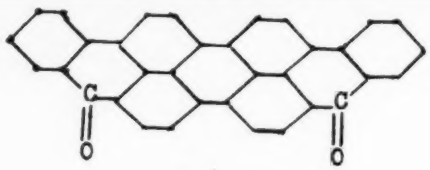

Figure 12
Violanthron or Dibenzanthron, Ahcovat Dark Blue BO. A Trichloro Derivative is Ahcovat Navy Blue R. $Bz^2,Bz^{2'}$ Dimethoxy Dibenzanthron is Ahcovat Jade Green B.

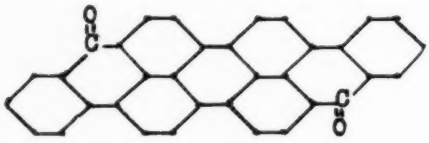

Figure 13
Isodibenanthron, Chlorination Gives Ahcovat Brilliant Violet 2R and 4R. Bromination Gives Indanthrene Brilliant Violet 3R.

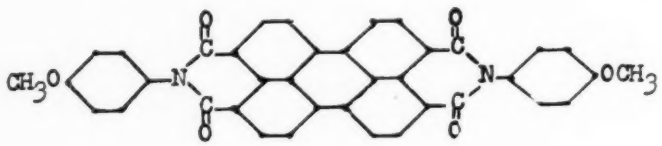

Figure 14
Indanthrene Scarlet R

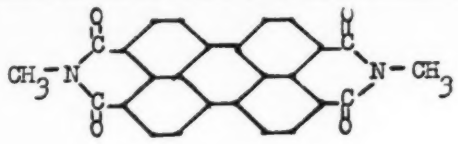

Figure 15
Indanthrene Red 2G

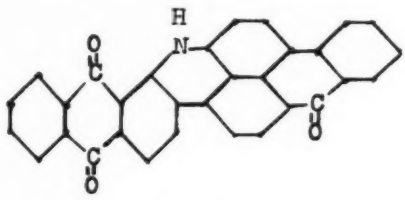

Figure 16
Ahcovat Olive Green B

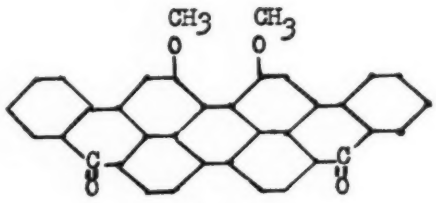

Figure 17
Ahcovat Jade Green B

Dibrominated anthanthrone is Indanthrene Brilliant Orange RK (Fig. 10). Vat Scarlet RM is a bromoiodoanthanthrone. Indanthrene Brilliant Orange GR (Fig. 11) also is used both in printing and dyeing.

Of great importance are the dibenzanthrone (Fig. 12) and isodibenzanthrone dyes (Fig. 13). Ahcovat Brilliant Violet 2R and 4R are chlorinated isodibenzanthrones. Other dyes containing the perylene structure are Indanthrene Scarlet R (Fig. 14) and Indanthrene Red 2G (Fig. 15).

Figure 16 shows a hybrid type of unsymmetrical structure, Ahcovat Olive Green B. Here we have benzanthrone and anthraquinone joined by a six-membered ring containing nitrogen. It is interesting to compare the chemical structure of this dye with that of another green dye, Ahcovat Jade Green B (Fig. 17), which has a compact symmetrical structure, and gives a much brighter and purer green shade on prints and dyeings than the Olive Green, which is rather dull. Both dyes are good printing colors and have excellent fastness properties. However, the Jade Green gives better prints on heavy shades and shows better over-all performance characteristics. In fact, Vat Jade Green B seems to have a nearly perfect combination of features expected or desired of a vat dye, or its soluble leuco sulfuric ester.

Up to this point the colors considered have nearly all been good printing types. Let us now examine the constitution of some vat dyes which show poor printing performance. Two dyes of similar shade are Ahcovat Olive R (Fig. 18) and Ahcovat Olive T (Fig. 19). It will be noted that Olive T has the same structure as Olive Green B (Fig. 16) but carries with it an aminoanthraquinonyl group. This hybrid combination results in the duller military shade and a loss in printing performance.

Vat Olive R, which consists of two alphabenzoylaminoanthraquinone nuclei joined by a nitrogen forming a pyrrol ring, is also considered unsatisfactory for printing. Isomers of this dye, however, Vat Brown R and Vat Golden Orange 3G, have better printing properties.

Indanthrene Brown BR (Fig. 20) and Indanthrene Khaki 2G (Fig. 21), containing respectively three and five anthraquinone nuclei, illustrate the principle that multiple-quinone systems tend to inhibit printing performance.

This principle is further illustrated in the structure of Indanthrene Direct Black RB (Fig. 22), a combination of pyranthrone joined with two mols of aminodibensanthrone and two mols of aminoanthraquinone. Separately or as a mechanical mixture the pyranthrone (Golden Orange G) and aminoviolanthrone (Vat Green B) print satisfactorily, but, combined chemically as above, they do not print by conventional methods. As a matter of fact, it has been a rather difficult research problem to produce a satisfactory vat printing black of a homogenous molecular species. Since all light in the visible spectrum must be absorbed, the molecule is required to be somewhat heterogeneous and complex, and such combinations usually lead to poor printing characteristics or other weaknesses, such as poor bleach or wash fastness. One solution to this problem is illustrated in the formula of Fig. 23, the mixed bromoindigochloronaphthioindigo molecule of Indanthrene printing Black BL. Here sufficient molecular complexity is obtained to produce a black shade without sacrifice of printing character.

During more than fifty years of intensive research activity by chemists in the field of vat colors, hundreds of dyes have been synthesized. A majority of these have been discarded at the laboratory stage, and many others, which were put into commercial production, have been dropped and are no longer used by printers

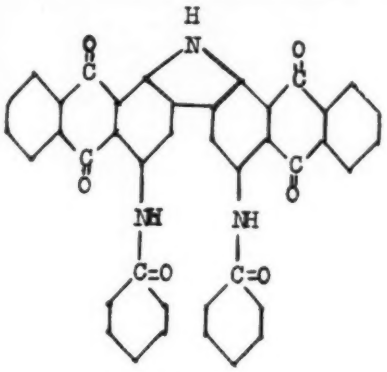

Figure 18
Ahcovat Olive R

and dyers. Many vat dyes listed in Rowe's *Color Index* (published 1924) are now obsolete or seldom used. Examples are the following: Indanthrene Orange RRK = 1,2,4 tribenzoylaminoanthraquinone; Algol Red 5G = 1,4 dibenzoylaminoanthraquinone, CI #1131; and Indanthrene Orange 7RK = 2,6 dianthraquinonyldiaminoanthraquinone, CI #1140. However, it is significant that certain general types of vat dyes having in each case a simple basic structural pattern have maintained their position in the field throughout these years.

Conclusions

Any student of organic chemistry knows how difficult it is to make broad generalizations that characterize the behavior pattern of even a narrow class of organic compounds. Each compound tends to exhibit individual characteristics, often out of line with so-called typical behavior. Exceptions are apt to be the rule in this field. However, on the basis of known data, it seems safe to make the following conclusions regarding vat colors:

1. As a rule, a vat color that exhibits good printing properties is suitable for all other applications, including conversion to the soluble leuco sulfate ester.
2. Nearly all the more satisfactory vat printing colors have a compact polynuclear ring system with one pair of reducible quinone or carbonyl groups. Examples are the indigoid, thioindigoid, pyranthrone, anthanthrone, dibenzpyroquinone, dibenzanthrone, isodibenzanthrone and flavanthrone types.
3. Simple substituents from the group of F, Cl, Br, I, CF_3, CH_3, OCH_3, and OC_2H_5 may produce a profound influence on the shade and certain other characteristics of the dye, but seldom inhibit its printing performance. In fact, they often may improve it.
4. Larger groups, such as benzoylamino and anthraquinonylamino, as well as

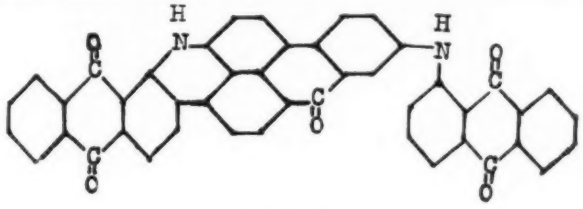

Figure 19
Ahcovat Olive T

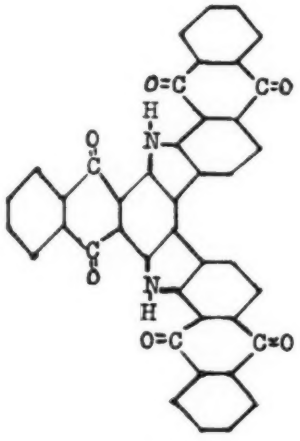

Figure 20
Indanthrene Brown BR

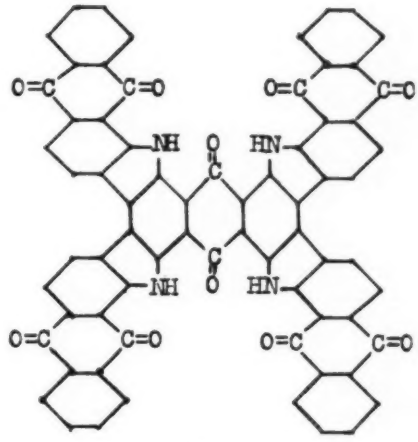

Figure 21
Indanthrene Khaki 2G

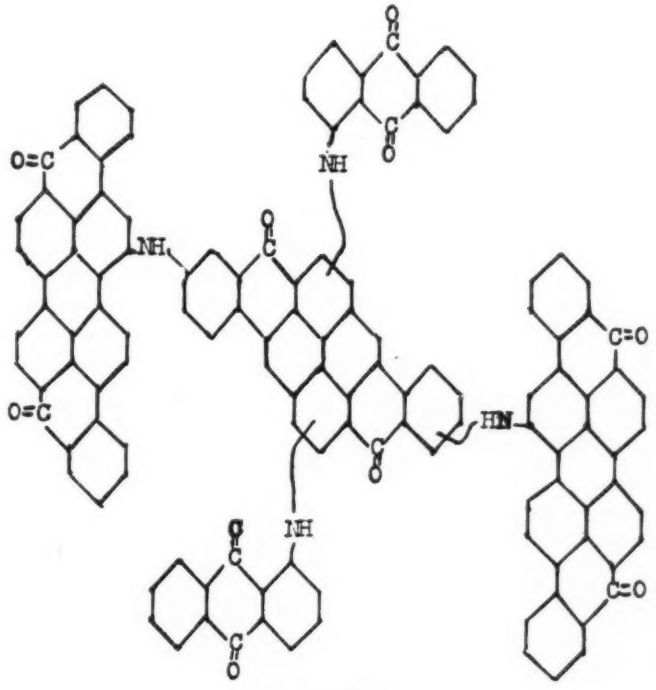

Figure 22
Indanthrene Direct Black RB. MW = 1794

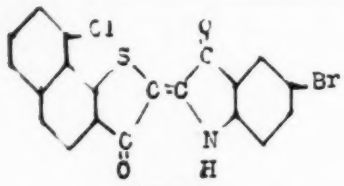

Figure 23
Indanthrene Printing Black BL.
MW = 442.5

molecular combinations containing multiple quinone systems, tend to inhibit printing performance.

5. For brilliance of shade and uniformity of behavior in printing and dyeing, the more symmetrical vat dyes of compact polynuclear ring structure, molecules of which function chemically as a single unit, are the preferred types.
6. Poor printing behavior and duller or mixed shades, such as olive, gray or brown generally result from hybrid combinations of large quinone-chromophoric systems, although fastness and dyeing properties may be excellent.

Reference

(1) Rhode Island Intersectional Contest Paper, "Some Conditions Affecting the Application of Vat Colors." Am. Dyestuff Reptr. *38*, p. 69-75, 1949.

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PTI Student Chapter Report

AT a meeting of the Philadelphia Textile Institute Student Chapter the speaker was H. G. Smolens of Buffalo Electro Chemical Company. His topic was the continuous bleaching of piece goods. Two models of J-box systems were shown and proved very interesting.

Respectfully submitted,
HARRY A. ROSELLE, *Secretary*

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Membership Applications

SENIOR

David B. Andrews—Asst. Mgr. Process Develop. Dept., General Aniline & Film Corp., Rensselaer, N. Y. Sponsors: A. E. Herrmann, Jr., C. Streck.

Kenneth D. Bacon—Organic Chemist, Dow Chemical Co., Midland, Mich. Sponsors: F. K. Quigley, Jr., H. J. Rupright.

Leon G. Boiko—Technician, J. J. O'Donnell & Co., New York, N. Y. Sponsors: C. W. Dorn, G. C. Ramey.

Renato S. Cardoso—Sales Device Tech., Industrias Quimicas Brasileiras "Duperial" S.A., Recife, Brasil. Sponsors: C. J. McLaughlin, S. N. Seely.

Fred J. Cofer—Supt., The Rivoli Mills, Chattanooga, Tenn. Sponsors: W. T. Evans, W. H. Schoellhorn.

David J. Collins—Salesman, Atlas Color & Chemical Co., Boston, Mass. Sponsors: F. W. Benvie, P. J. Collins.

Rodney B. Graham, Jr.—Colorist, Santee Print Works, Sumter, S. C. Sponsors: W. H. Jones, C. F. Embody.

Maurice Jones—Boss Dryer, Ohio Falls Dyeing & Finishing Co., Louisville, Ky. Sponsors: R. H. Johnson, W. P. Welch.

Kenneth A. Lewis—Overseer of Dyeing, Ankokas Dyeing & Processing Co., Mt. Holly, New Jersey. Sponsors: E. C. Diehl, T. H. Hart.

Edward F. Lyons—Overseer of Dyeing, Wanskuck Co., Providence, R. I. Sponsors: E. O. Appeltofft, H. H. Hollingsworth.

James T. McLaughlin—Asst. Overseer of Dyeing, Old Bennington Weavers, Inc., Bennington, Vt. Sponsors: H. Gendreau, C. W. Saalfrank.

Russell A. Olivet—Mill Analyst, Bemis Bros. Bag Co., Talladega, Ala. Sponsors: S. J. Davis, R. N. Foster.

George W. Reynolds—Supt., Riegel Textile Corp., Ware Shoals, S. C. Sponsors: R. H. Souther, K. E. Traynham.

Laval Richard-Tessier—Chemist & Salesman, American Aniline Products, Inc., New York, N. Y. Sponsors: P. Theel, T. H. Hart.

George W. Smith—Asst. Dist. Mgr., Organic Chemicals Dept., E. I. duPont de Nemours & Co., Inc., Boston, Mass. Sponsors: W. W. Pennock, W. H. Zillessen.

Walter C. Stewart—Asst. Dyer, Excelsior Mill No. 4, Pendleton, S. C. Sponsors: H. R. Walker, Jr., C. T. Worthen.

Arthur W. Thomas—Foreman, New York Mills Div. of A. D. Julliard & Co., New York Mills, N. Y. Sponsors: J. T. Goosetrey, W. B. Broadbent.

Kenneth T. Young—Sales Repres., Armour Soap Works, Philadelphia, Pa. Sponsors: R. B. Stehle, L. J. Armstrong.

JUNIOR

Richard H. Baumann—Chem. Engr., Linen Thread Co., Inc., Paterson, N. J. Sponsors: H. L. Young, F. Baumann.

Raymond E. Townsend—Shift Dyer, Excelsior Mill 4, Pendleton, S. C. Sponsors: C. T. Worthen, H. R. Walker, Jr.

ASSOCIATE

William A. Munz—Chemist & Dyer, Resolute Knitting Mills, Inc., Philadelphia, Pa. Sponsors: W. O. Neeb, W. B. Tucker.

H. O. Williams—Powell Knitting Co., Spartanburg, S. C.

Daniel L. Worth—Textile Chemist, Mooresville Mills, Mooresville, N. C. Sponsors: J. W. Stallings, R. H. Baker, Jr.

STUDENT

Charles D. Flamand—Lowell Textile Institute. Sponsor: E. E. Fickett.

John V. Nuzzolo—Lowell Textile Institute. Sponsor: E. E. Fickett.

George H. Fisk—Georgia Inst. of Technology. Sponsor: C. A. Jones.

Alan D. Nacht—Georgia Inst. of Technology. Sponsor: C. A. Jones.

Lamar C. Cloninger—North Carolina State College. Sponsor: H. A. Rutherford.

Lawrence J. Linker—North Carolina State College. Sponsor: H. A. Rutherford.

Robert F. Miller—North Carolina State College. Sponsor: H. A. Rutherford.

Vincent J. Shanahan—New Bedford Textile Inst. Sponsor: F. Tripp.

Gerald Desmond, Jr.—Philadelphia Textile Inst. Sponsor: W. H. Hughes.

Anthony Cassetta—New York State Inst. of Applied Arts & Sciences. Sponsor: L. A. Henry.

Stewart Kaplan—New York State Inst. of Applied Arts & Sciences. Sponsor: L. A. Henry.

William Krier—New York State Inst. of Applied Arts & Sciences. Sponsor. L. A. Henry.

Ernest Larrat, Jr.—New York State Inst. of Applied Arts & Sciences. Sponsor: L. A. Henry.

Jack Lashinsky—New York State Inst. of Applied Arts & Sciences. Sponsor: L. A. Henry.

Stanley Lazarek—New York State Inst. of Applied Arts & Sciences. Sponsor: L. A. Henry.

Irwin J. Lederman—New York State Inst. of Applied Arts & Sciences. Sponsor: L. A. Henry.

Robert J. Lynch—New York State Inst. of Applied Arts & Sciences. Sponsor: L. A. Henry.

George C. Morehouse—New York State Inst. of Applied Arts & Sciences. Sponsor: L. A. Henry.

Edward Ober—New York State Inst. of Applied Arts & Sciences. Sponsor: L. A. Henry.

Edward Richlin—New York State Inst. of Applied Arts & Sciences. Sponsor: L. A. Henry.

John Sabatini—New York State Inst. of Applied Arts & Sciences. Sponsor: L. A. Henry.

Richard A. Tegtmeier—New York State Inst. of Applied Arts & Sciences. Sponsor: L. A. Henry.

Henry Wilensky—New York State Inst. of Applied Arts & Sciences. Sponsor: L. A. Henry.

APPLICATIONS FOR TRANSFER TO SENIOR MEMBERSHIP

Ruth E. Atkinson, George E. Fleming, William F. Gerrow, Jr., Frederick E. Hilger, Archavir M. Nalbandian, Leon Tigler, Robert A. Walsh, Stephen H. Wilson, George W. Wright.

Philadelphia Section—

THE ACCEPTANCE OF NYLON BY THE CONSUMER*

J. B. QUIG

Asst. Mgr. Development Section, Technical Division,
E. I. du Pont de Nemours & Co.

The wide acceptance of nylon as a textile fiber can be related to its many favorable chemical and physical properties, which make it suitable for such a variety of textile purposes, not only from the viewpoint of beauty and styling but from the viewpoint of practicality in daily use. Durability in wear and ease of maintenance in good condition make nylon of increasing importance in an age when high living standards and high wages force the manager of the household to do all her own work. Some of the properties that give nylon its unique position among fibers in modern living include the following: strength, resistance to abrasion, lightness, elasticity, toughness, fast drying, drape, flame resistance, mildew resistance, moth resistance, and shape-retaining properties based on heat setting.

THE acceptance of nylon by the textile trade and the consumer has been admittedly phenomenal. But what are the underlying causes for its success? I believe that it is well known that nylon's great strength, abrasion resistance, and ability to hold its shape are among the principal reasons for its almost universal acceptance as the best fiber for ladies' sheer, long-wearing hosiery. But this same nylon is still new in many other textile uses, and there are hundreds more yet to come in which nylon's unique qualities can be used.

While nylon has inherent physical and chemical properties that set it apart from all other fibers, great versatility and adaptability, these factors do not tell the whole story.

To get the proper perspective, it is necessary for us to look at the setting which was prepared for the entrance of nylon into the textile industry between the years 1938 and 1950. Our entire economy had changed in the last twenty-five years, and with this change had come new and far-reaching demands on textiles. The expanding technology, which created the automobile, airplane, radio, television, Diesel engine, radiant heating, the harvesting combine and many other devices, has revolutionized the requirements of textiles to satisfy chemical and engineering needs and also has had a far-reaching effect on the mode of living of our people.

For example, the ease of getting from one place to another by auto or plane has revolutionized the sale of seasonal clothing. Summer clothing is now sold in the winter and winter clothing is sold in the summer to those people who use these modern methods of travel. Traveling by plane and auto has lessened the permissible requirements for bulk and weight of clothing and this, in turn, has imposed new requirements for easy washability, quick drying, minimum ironing and pressing of garments. The greater facility of going to the country, the country club, the seashore and to Florida has also had a marked effect on our participation in sports and hence the need for garments which have light weight, durability, washability and easy care. Our sheltered living in heated homes, taxicabs, automobiles, buses, trains and offices has vitally changed the requirements for warmth of fabrics. Consequently, there has been a definite trend toward lighter-weight clothing which has the same durability and functional properties as heavier-weight clothing. The great strength, lightness, elasticity, toughness, easy washability, fast drying, flame resistance, moth resistance, mildew resistance and heat-setting qualities of nylon have been effectively used by the textile technologist to produce fabrics that meet the needs with which the consumer is faced today. In the fact that nylon possesses properties which allow it to be used alone or in combination with other fibers to produce better functional fabrics for present day living are found the underlying causes for its great success.

We must probe further, however, in order to obtain the complete picture. I know of no more fruitful place than the home in which to find the reasons for the success of nylon. There the new technology of the modern age has radically changed the situation for the manager of the household. Vastly increased employment at higher wage rates has resulted in a great shift in labor from the home and the farm to the factory. This shift was inevitable because the average family, which formerly employed help to make living easier, cannot afford to pay labor rates that are commensurate with those paid by industry today. Furthermore, a by-product of our new social legislation has created a feeling in this country that domestic labor in the home is in a lower stratum of dignity than that of the factory, store, or market place. The net result is that the burden of housework has fallen almost completely in mother's lap. And she is not going to stand for it! She will desperately look for some way to relieve the situation and she can be counted on to buy those things which make life easier for her.

Women's desires have always influenced textile style, dressy appearance and versatility of fabrics. This, in the past, has stemmed mainly from subjective considerations; but, today, the housewife is face to face with the problem of how to lighten the burden of the household, and she is now objectively dictating the requirements for new fibers and fabrics which will make living easier for her.

The electrical industry seems to have had some supernatural power in sensing the importance of manufacturing products designed to give easier living in the home. This is evidenced by the labor saving devices for the home which are now available—the improved modern washer, electric drier, electric iron, electric mangle, electric vacuum cleaner, electric stove, electric refrigerator, deep freeze, electric toaster, electric dishwasher, electric garbage-disposal unit and the electric floor-polishing machine. These devices for easier living now account for a very large segment of the business of the electrical industry.

The enhanced properties which nylon confers to fabrics—strength, toughness,

* Presented before Philadelphia Section on March 31, 1950.

long wear, easy washing, fast drying, dimensional stability, lightness, elasticity, flame resistance and resistance to moths and perspiration—are found in the results of 50 consumer surveys which we have made, covering 20,000 purchasers of 30 nylon textile products. The statements—"easy laundering", "quick drying", "amazing durability when sheer", "shape retention", "resistance to shrinking", "end of era of darning baskets", "no stretchers needed", "long-wearing qualities", "light weight and easy care, ideal for traveling", "no scratchiness", "little or no ironing required", "strength with light weight", "attractive sheer appearance"—occur time and time again in the replies of the 20,000 purchasers surveyed. The results are a tremendous vote in favor of nylon's contribution to extra value and easier living.

But as far as our chemists are concerned—pleased as they are with the unusual acceptance of nylon by the trade—more must be said in order to satisfy them and to set nylon apart technically from other polymeric fibers. Carothers and his coworkers set out to add to man's knowledge of large molecules. They found that they could make new kinds of giant molecules—polyamides—which possess high molecular weight, microcrystallinity, chemical stability, and fiber-forming properties.

It is now known that microcrystallinity and the capacity to yield strong and pliable fibers are properties which are not confined to the linear polyamides; and that they are exhibited in varying degrees by other types of polymers and copolymers.

The particular importance and value of nylon from the fiber point of view depends to a large extent on its high melting point (482°F.), which is much in excess of the melting points of the thermoplastic polymers, used previously for fibers. It is recognized that microcrystallinity and high molecular weight are essential attributes of fiber-forming polymers. At the same time, a high melting point and chemical stability are practical necessities. Nylon has all of these attributes.

A further valuable property contributing to the success of nylon is concerned with a heat phenomenon—its ability to be "heat-set". Setting of nylon by heat is now recognized as one of its most important properties. Setting makes it possible to stabilize the shape and size of a nylon fabric by subjecting it to moist or dry heat. Thus, nylon fabrics, both woven and knitted, that have been properly set, acquire satisfactory dimensional stability. Users of nylon hosiery know that their hose assume a flat, neatly pressed condition when hung up to dry after washing. This is because the hose have been heat-set. Similarly, other nylon fabrics can be set to prescribed sizes and shapes. Pleats can be set by heat which will withstand repeated washing without need of ironing. Heat setting of nylon fabrics thus makes a significant contribution to easier living and satisfactory performance of nylon garments.

The true measure of the worth of a new development within any field lies in the answer to this question: "Does it replace or does it add to what presently exists?" In the case of nylon, the measure of its worth is great. Nylon has made a sound contribution. It has brought new possibilities to the textile industry. It has inherent physical and chemical properties that set it apart from all other fibers. Versatility and adaptability are the factors that make nylon more than just another fiber with good properties.

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NNE Silver Outing

THE 25th annual outing of the Northern New England Section will be held June 9th at the Merrimac Valley Country Club, Methuen, Massachusetts.

All living charter members of the Association, wherever they may be, are to be invited as a special feature of this event.

Albert E. Sampson, a charter member and general chairman of the first outing, is the Silver Outing chairman.

The following have been chosen to assist:

Chairman Ex officio—Frank J. O'Neil; *Golf Committee*—Alfred T. Grant, *Chairman,* Herbert F. Wieland, Lyman Billings and Harry Buckley; *General Sports*—Joseph E. Travers (Charter member); *Prizes*—Richard G. Robertson; *Dinner*—Edward B. Bell; *Program*—Azel W. Mack; *Finance*—Walter H. Zillessen; *Music*—M. J. Lane (Charter member); *Parking*—Howard L. Jenkins; *Special Events*—Harold W. Leitch (Charter member) and *Publicity*—Frederic A. Prisley.

Also assisting will be Stephen W. Bastow (Charter member), Alan A. Claflin (Charter member); Roland E. Derby, John Sheehy, Thomas W. Shoesmith and Hyman P. Selya.

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Philadelphia Section to Hold "Meeting-in-Miniature"

THE Philadelphia Section has planned a "Meeting-in-Miniature" to be held on October 28th replacing its scheduled meeting of October 13th. This meeting will be an all day Saturday gathering at the Philadelphia Textile Institute.

Morning sessions will include groups on hosiery and synthetic fibers. The regular business meeting of the Section will be conducted at luncheon. During the afternoon, sessions will be held on wool and cotton. Harry L. Morgan, Chairman of the Program Committee will be in charge of this meeting.

CALENDAR

COUNCIL

Meetings: June 9 (Montreal, Que.) Sept. 28-30 (Portsmouth, N. H. Convention) Nov. 17 (New York).

NATIONAL CONVENTIONS

1950: September 28 to 30, Portsmouth, N. H.
1951: October 18 to 20, Statler, New York.
1952: Boston.

HUDSON-MOHAWK SECTION

Meetings: May 19 (General Aniline Works, Renssalaer, N. Y.), June 23 (Annual Outing, Shaker Ridge Country Club, Albany, N. Y.), Sept. 15 (Albany), Oct. 20 (Utica), Dec. 8 (Albany), Jan. 19, 1951 (Albany), Mar. 16, 1951 (Albany), May 11, 1951 (Albany), June 22, 1951 (Annual Outing).

MID-WEST SECTION

Meeting: June 17 (Annual Outing, Lake Lawn Lodge, Delavan, Wisc.), October 28 (Chicago, Ill).

NEW YORK SECTION

Outing: June 16.

Meetings: Sept. 29 (Swiss Chalet, Rochelle Park, N. J.), November 17 (Swiss Chalet), Jan. 12, 1951 (Swiss Chalet), Feb. 16, 1951 (New York, N. Y.), March 23, 1951 (Swiss Chalet), May 4, 1951 (Swiss Chalet), June 15, 1951 (Outing).

NORTHERN NEW ENGLAND SECTION

Meeting: May 19, June 9 (Merrimac C. C., Methuen, Mass.).

PHILADELPHIA SECTION

Meetings: June 9 (Annual Outing, Torresdale-Frankford Country Club, Philadelphia), October 28 (Meeting-in-Miniature, Philadelphia Textile Institute), December 8, January 17, 1951.

PHILADELPHIA TEXTILE INSTITUTE STUDENT CHAPTER

Meeting: May 24.

PIEDMONT SECTION

Meetings: June 30-July 1 (Ocean Forest Hotel, Myrtle Beach, S. C.), October 28 (Charlotte, N. C.)

RESEARCH COMMITTEE

Meetings: June 9 (Montreal, Que.), Sept. (Portsmouth, N. H., Convention), Nov. 17 (New York).

RHODE ISLAND SECTION

Meetings: May 26 (Johnson's Commodore Room, Providence, R. I.) October 27 (Providence Engineering Society Hall) November 17 (Johnson's Commodore Room).

SOUTH CENTRAL SECTION

Meetings: May 20 (Hotel Patten, Chattanooga, Tenn.) August 18-19 (Summer Outing—Read House—Hotel Patten, Chattanooga Country Club—Chattanooga, Tenn.).

SOUTHEASTERN SECTION

Meetings: May 27 (Columbus, Ga.), June 9-10 (Outing, Radium Springs, Ga.), September 23 (LaGrange, Ga.), December 9 (Atlanta, Ga.).

WESTERN NEW ENGLAND SECTION

Meetings: May 26 (Waverly Inn, Cheshire, Conn.) June 23 (Outing at Wallingford, Conn. Country Club).

L. to R.—Paul J. Martin, Frank J. O'Neil and Lance H. Rees

March Meeting of N. N. E. Section

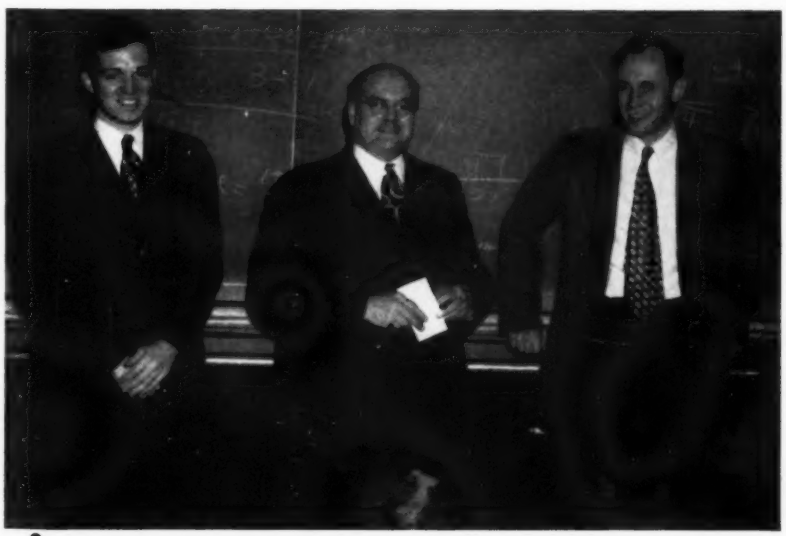
ONE of the highlights of the season for the Northern New England Section was the meeting held at Massachusetts Institute of Technology on March 24, 1950. The program began in the afternoon with a presentation, by Professors E. R. Schwarz and R. B. Finch and Mr. F. Young of Massachusetts Institute of Technology, of a simple and down-to-earth picture of quality control in textiles. A skit was enacted in which Professor Finch played the part of a mill man interested in learning whether the laboratory testing done in his mill was adequate, and, if not, why not. Professor Schwarz, acting as moderator, restated the questions from Professor Finch in several different ways in order to put the various points across to the audience. Mr. Young acted as the authority on the subject, and again Professor Schwarz, by skillfully questioning Mr. Young, was able to obtain a number of various informative answers to the questions. The novel manner of putting over basic fundamentals of quality control easily held the interest of an audience consisting mainly of chemists and dyers.

The afternoon program was followed by a dinner in the Graduate House, during which a short business meeting was held.

The evening program included two speakers, Paul J. Martin of the Socony-Vacuum Oil Company Laboratories, Brooklyn, New York and Lance H. Rees, Technical Director, Manton-Gaulin Manufacturing Co., Inc., Everett, Mass.

Mr. Martin presented a paper on "Problems in the Development of Efficient Woolen-Fiber Lu ricants". This paper was published in the *American Dyestuff Reporter* of April 3, 1950.

Mr. Rees spoke on the Manton-Gaulin Homogenizer and its use in the production of warp sizes. He described the action of the homogenizer in producing a smooth, finely dispersed size from a thick starch gel and also made recommendations for temperature and pressure controls, slashing-room set-up, and the application to warp sizing and finishing. Mr. Rees presented a number of advantages claimed for the homogenizer.



L. to R.—Prof. R. B. Finch, Prof. E. R. Schwarz, and F. Young.

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Report of Piedmont Section Spring Meeting

THE Spring Meeting of the Piedmont Section was held at the Robert E. Lee Hotel, Winston-Salem, North Carolina on Saturday, April 1, 1950.

A luncheon and business meeting was attended by the officers and councilors of the section. J. C. Whitt reported on the progress of the plans for the Myrtle Beach Outing to be held June 30-July 1 and Norris Rabold discussed the plans for the Annual Convention to be held September 28, 29, and 30 with particular reference to the problem of transportation for the members from the Piedmont area.

The Technical Session was in charge of the student chapter of North Carolina State College. Two papers each were presented by the students of Clemson College and the students of North Carolina State College. The titles were as follows:

"Testing for Honeydew on Raw Stock Cotton"—Roy Boggs, Clemson College.

"The Application of Vat Colors to Nylon at Normal Temperatures"—Tom Carter, Clemson College.

"An Investigation of the Relationship Between the Amount of Dye Used and Sensation Obtained and its Possible Application in Textile Dyeing"—Henri Cikurel, North Carolina State College.

"The Effect of Abrasion on the Dyeing Characteristics of Cotton"—Kenneth Jenkins, North Carolina State College.

The first prize was awarded to Tom Carter and the second prize to Henri Cikurel.

The last part of the Technical Session was devoted to a paper presented by W. C. Peurifoy of the Hoover Hosiery Mills, Concord, North Carolina, on "Stripping of Nylon with Textone", 275 people attended the Technical Session.

Henry C. Alexander, noted humorist of Charlotte, North Carolina was the speaker at the Evening Banquet. 289 members and guests attended. J. Leon Moore of the DuPont Co. was General Chairman for this meeting. The high caliber of the technical papers presented by the students of North Carolina State and Clemson was especially noteworthy and it was decided by the officers that this contest would be an annual event.

Respectfully submitted,

W. CHESTER COBB, *Secretary*

EMPLOYMENT REGISTER

This column is open for two insertions per year, per member, without charge. Blanks can be obtained from, and filed with, the Secretary of the Association, Lowell Textile Institute, Lowell, Mass. It is understood that these will be open to inspection by prospective employers, who can obtain further information from the Secretary.

50-12

Education: University, M.S.

Experience: microbiologist, expeditor, chemist.

Age 37, married; references; So. Conn. or New York City preferred but not essential.

5-1, 5-15

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BDTI Student Chapter Meeting Report

THE Student Chapter of the Bradford Durfee Technical Institute held its second lecture meeting of the current year on March 23, 1950.

The forty people in the school library were very fortunate to attend one of the most interesting lectures of the Chapter. Ben Verity, associated with Carbic Color & Chemical Co., and formerly of American Printing Co., gave an unusual and very interesting lecture on "The Experience of a Chemist".

Respectfully submitted,
AMERICO ALMEIDA, *Secretary*

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Meeting, New York Section

A MEETING of the New York Section was held on April 14th at Kohler's Swiss Chalet, Rochelle Park, New Jersey. A dinner and social hour preceded the meeting.

The Chairman, Charles W. Dorn, introduced George O. Linberg, National Vice-President, Dr. Harold W. Stiegler, National Director of Research, and Howard J. Fletcher, Executive Vice-President of the Silk and Rayon Dyers and Printers Association. The Chairman also called attention to the May 5th meeting, which would be the Annual Business Meeting, and at which time there would be discussion on the proposed change in the Constitution calling for four Vice-Presidents.

The speaker was James A. Stevenson, Plant Superintendent, Bradford Dyeing Association, who discussed modern trends in textile investigations. Following Mr. Stevenson's address two movies were shown, one depicting the operations at Bradford Dyeing's plant and the other entitled "Textiles Unlimited", released by General Electric, which portrayed various electrical applications in the textile industry.

The attendance was 300.

Respectfully submitted,
NORMAN A. JOHNSON, *Secretary*

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Report of H-M Section

THE March meeting of the Hudson-Mohawk Section was held on Friday evening, March 24, 1950, at the Hotel Utica, Utica, New York.

Bert R. Celentano of the General Dyestuff Corporation presented a paper entitled "Application of Napthols" and William A. Nelson gave a report on the last council meeting. A moment of silence was held in memory of J. Harry Atkinson.

Members of the Student Chapter of the Utica Technical Institute were guests of the Section. 75 members and guests were present.

WILLIAM A. NELSON, *Secretary*

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Philadelphia Section March Meeting Report

A MEETING of the Philadelphia Section was held March 31st in the English Room of Kugler's Restaurant in Philadelphia.

Chairman Stehle introduced several guests including Arthur W. Etchells and George O. Linberg, National Vice-Presidents, Dr. Leonard Armstrong, Vice-Chairman of the Mid-West Section, William H. Gosh, an executive of the Nolde & Horst Co. of Reading, Pa., formerly president of the National Hosiery Association, and Harry Kerr of C. H. Masland Co., Carlisle, Pa.

Following a short business meeting, Harry L. Morgan, Chairman of the Program Committee, introduced Dr. Joseph B. Quig who spoke on "Synthetic Fibers."

144 members and guests attended the dinner. The technical session was attended by 175.

Respectfully submitted,
THOMAS H. HART, *Secretary*

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1950-51 Meeting Dates, New York Section

THE following dates have been tentatively chosen for meetings of the New York Section for the 1950-51 season:

September 29, 1950—Swiss Chalet, Rochelle Park, N. J.

November 17, 1950—Swiss Chalet, Rochelle Park, N. J.

January 12, 1951—Swiss Chalet, Rochelle Park, N. J.

February 16, 1951—New York City.

March 23, 1951—Swiss Chalet, Rochelle Park, N. J.

May 4, 1951—Swiss Chalet, Rochelle Park, N. J.

June 15, 1951—Outing.

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ABSTRACTS

Analysis of Cellulose Derivatives

L. B. Genung, Analytical Chemistry, 22, 401-5, March, 1950.

Cellulose derivatives, because of their high polymeric carbohydrate structure, require modifications of conventional methods of organic analysis.

Details are given for the analysis of cellulose acetate, mixed esters of cellulose, cellulose nitrate, and methyl and ethyl ethers. Complete analyses of some representative samples give an indication of the over-all accuracy of the methods employed.—W.H.C.

Identification of Organic Dyestuffs by X-Ray Powder Diffraction

G. Susich, Analytical Chemistry 22, 425-30, Mar., 1950.

The x-ray powder pattern is used for the identification of organic dyestuffs by comparison with standard samples. A discussion is given of the difficulties arising from polymorphism and the sensitivity and limitation of the method. Application of this technique to various dyestuffs and to difficult problems of dyestuff chemistry is described. The x-ray analysis is compared with methods such as chemical identification, dye tests, and heated specimen microscopy. This x-ray technique is a very simple method and is capable of a high degree of sensitivity.—W.H.C.

Analysis By Infrared

J. E. Tyler, Interchemical Rev. 8, 91-103, Winter 1949-50.

The infrared absorption spectrum of an organic compound is without doubt its most characteristic physical property because it is in fact the signature of the compound, written in a kind of molecular cryptography that is an exact statement of the structure of the molecule.

The importance of the infrared region of the electromagnetic spectrum in analytical chemistry is based on four simple facts: (1) the characteristic absorption (or resonant) frequencies of organic molecules are for the most part in the infrared region from 2.5μ to 40μ; (2) the infrared spectrum of a compound is unique for each compound; (3) specific resonant frequencies (and, therefore, absorption bands) can be definitely attributed to specific groups in many cases; and (4) the curve of a mixture is the sum of the curves of the components. In addition, a permanent record is obtained, and a relatively small sample is required.

The most obvious analytical use of infrared spectroscopy is in the identification of pure organic compounds. It is very useful in recognizing specific molecular configurations and in studying isomers. Certain specific groups can be recognized: e.g., the hydroxyl group has a specific absorption band at 2.9μ, and all esters have characteristic absorption at about 5.8μ.

Like every other analytical technique, infrared spectroscopy has its limitations, but they have interfered little with its increasing use in analytical and research laboratories.

Infrared absorption spectra of a number of organic compounds are shown.—W.H.C.

Fundamentals of Detergency

F. C. Harwood, Fibres 11, 9-11, Jan., 1950.

A good detergent must possess more than good wetting properties; it must be capable of emulsifying the dirt and of holding it in suspension.

The main stages in a laundering detergent process are:

(a) efficient penetration or "wetting-out" of the fabric in order to establish intimate contact between the dirt and the detergent solution;
(b) displacement of the dirt from the fibers by the detergent liquor;
(c) "suspension" of the removed dirt in a finely divided and stable condition;
(d) removal of dirty liquor.

The initial removal of dirt involves numerous factors, such as the surface and interfacial activities of the detergent solution, the energy relationships at the various interfaces concerned, and the physical and chemical nature of the soiling matter and of the surface to which it adheres. The subsequent stabilization of the removed dirt is closely linked with the electrical condition of the dispersed particles.

Work has been going on for some time to determine the effect of certain modified cellulosic compounds on the detergent properties of the synthetics. There are indications that the use of these cellulosic compounds as an additive may make up for the lack of suspending power displayed by practically all the synthetic detergents at present on the market.

So far, no universally accepted method of assessing the value of a detergent has been published. There is but little agreement on the question of the use of standard soiling as a means of assessing detergent efficiency. The effect of foams on detergent power is not understood. The conclusion reached is that detergency in all its aspects constitutes a very complex problem.

The Dyeing of New Fibers

R. W. Speke, Fibres 11, 28, 30, Jan., 1950. (This is an abstract of a paper presented before the Midland Section of the Society of Dyers and Colorists.)

The new fibers may be classified as follows:

Group I: Good Dyeability
- Casein—"Aralac", "Lanital"
- Peanut Protein—"Ardil"
- Corn Protein—"Vicara"
- Soybean Protein

Group II: Moderate Dyeability
- Polyhexamethylene adipamide—Nylon, Perlon T
- Polycaprolactam—Perlon L
- Polyurethane—Perlon U

Group III: Poor Dyeability
- Polyethylene terephthalate—"Terylene"
- Polyvinyl chloride-acetate—"Vinyon"
- Polyvinyl chloride—Rhovyl
- Polyvinylidene chloride—Saran, Velon
- Polyacrylonitrile—Orlon.

The fibers listed in the third group contain no reactive groupings and are all characterized by chemical inertness and by a very low moisture absorption. They have little or no affinity for water-soluole dyes, but possess an affinity for water-insoluble dyes of the acetate type. The high orientation of these fibers, introduced by the stretching process, provides a further limitation in reducing the rate of diffusion of dyestuff molecules within the fiber structure.

A comparison is made of the dyeing properties of Ardil and Terylene, both expected to be used commercially soon in Britain. Ardil has a chemical affinity for a wide range of dyestuffs which are rapidly absorbed from aqueous solutions, and can be easily dyed in admixture with other fibers. Terylene, on the contrary, may be dyed only with selected acetate dyes at the highest possible temperature (100°C.). In this way shades of medium depth may be obtained, but not deep shades.—W.H.C.

Processes Used in Drycleaning Plants

G. P. Fulton, Papers A.A.T.T. 5, 87-91, March, 1950.

In dry cleaning, the main cleansing process is carried out in an organic liquid, with an addition of a drycleaning deter-

gent to increase cleansing action. Most dry cleaning is done in a petroleum solvent known as "Stoddard solvent", but approximately one-fifth of the dry cleaning in this country is done with one of the chlorinated hydrocarbon solvents, usually perchlorethylene or carbon tetrachloride. The last two are non-inflammable and their use is greater in cities where fire codes restrict the use of flammable solvents.

In many cases an emulsion of water is added to the drycleaning solvent along with the detergent, particularly in dry weather. This lessens the danger of static electricity and promotes the removal of soil.

The drycleaning solvent occasionally causes color bleeding, and if used on a fabric coated with a vinyl resin, will remove the plasticizer and leave the fabric stiff. Buttons made of polystyrene may be dissolved.

After dry cleaning the garments are "spotted" with aqueous solutions to remove spots caused by food and beverages and also perspiration.

Light colored garments may require a further treatment for complete cleaning. This process is called "wet cleaning" and consists of hand brushing with warm water and a neutral soap or synthetic detergent. The final operation is steam pressing.—W.H.C.

The Dyeing of Spun Nylon Yarns and Nylon Staple

S. G. Turnbull, Jr., Technical Bull. (du Pont) 6, 16-23, March, 1950.

Nylon staple can be dyed in conventional equipment, including circulating machines for rawstock, skein machines for skeins, and pressure dyeing machines for packages. Prior to dyeing, the material is given a mild scour with a weak alkali and an alkali-stable detergent to remove spin finish, coning oils or size. The use of strong inorganic acids for nylon processing or dyeing should be avoided.

A range of dyestuffs suitable for nylon staple is given, including acid, Chromacyl, chrome, direct, and acetate dyes. In addition, recommendations are made for dyeing blends of nylon and wool, and nylon unions containing cotton or viscose.—W.H.C.

The Dyeing and Finishing of Nylon Hosiery

Anon., Technical Bull. (du Pont) 6, 10-15, March, 1950.

The processing of women's nylon hosiery through the operations of scouring, dyeing with acetate dyes, and finishing is described in detail. In the case of hosiery containing both monofilament and multifilament yarns, which usually offers difficulty in dyeing because of the greater affinity of the monofilament yarns for dyes, a method for overcoming this trouble is suggested.

For men's and children's hosiery, which requires better fastness, the author recommends selected acid dyes, or for those which are to be subsequently steamed, top-chromed dyes.—W.H.C.

Ultraviolet Light Permits Quick Testing

F. Wood, Textile World 99, 142-5, 218-24, Nov., 1949.

When ultraviolet light (which is invisible to the human eye) falls on many materials the light is absorbed but in the absorption the material becomes excited and emits visible light. If this visible light disappears when irradiation ceases, the phenomenon is known as fluorescence; but if it continues, it is known as phosphorescence. It is the observation of fluorescent and phosphorescent effects on which ultraviolet-light testing is based.

Ultraviolet light is becoming of increasing use to the textile technologist. He can use it to detect contamination before visible defects or troubles result. He can use it to identify quickly many materials and fibers. He can also use it to check new shipments of many materials against samples or previous shipments.

Most of the textile fibers give characteristic fluorescence when exposed to ultraviolet light. Various oils can also be distinguished in this manner. A table of these fluorescent effects is included.

This technique is useful in identifying stains in fabrics, wool damage, tendering of cellulose, the presence of fungi, and to a certain extent, dyes and finishing materials.—W.H.C.

Homogenization in Warp Sizing

J. H. Kennedy III, Textile World 99, 127-34, Nov., 1949.

Homogenization is the action of breaking down particles and distributing these particles throughout a mixture. The reduction in size of relatively large particles to smaller fragments is accomplished by means of violet mixing, grinding, shearing, or a combination of the three actions under pressure. Homogenization affords an opportunity for more exact controlling of viscosity in textile applications such as sizing where previous batch methods often produced non-uniform lots.

The homogenizing process consists essentially of forcing a liquid or paste through a restricted mixing zone where forces of shear and turbulence bring about a reduction in the size of the particles in the mixture. The resulting product, being of finer dispersion of its elements, in many cases has physical properties different from the original materials.

Starch mixtures for slashing have traditionally been prepared by boiling the material for a long period, the time depending upon the type of starch and the viscosity required. Homogenization makes it possible to produce a sizing solution without boiling.

The greatest advantage found in the use of homogenized slashing solutions has been the maintenance of a uniform and stable viscosity. This has led to more even application of the solution to the yarn, and has resulted in increased weaving efficiency.

A report is given of a number of actual mill experiences, showing many advantages from the use of these installations. The operation of a typical homogenizer is explained and various manufacturers of this equipment are listed.—W.H.C.

The Relation Between the Rate of Formation of the Chromium Complexes of a Dye and Its Value in the Metachrome Process

E. Race, J. Soc. Dyers and Colourists 66, 141-8, Feb., 1950.

A study has been made of the rates of formation and the nature of the chromium complexes of selected dyes in order to ascertain whether or not a relationship exists between the rate of complex formation and the suitability of a dye for application by the metachrome process. The results indicate that, in the case of azosalicylic compounds containing a sulfo group, the dyes are unsuitable for use in the metachrome process probably because of co-ordination of chromium with the sulfo-group instead of, or as well as, chelation of chromium with the salicylic acid group. The examination of the rates of formation of the chromium complexes of a series of oo′-dihydroxyazo compounds of diminishing value as metachrome dyes has revealed that the greater the rate of chromium-dye complex formation the more suitable is the dye for application by the metachrome process. The results suggest that both substantivity and rate of complex formation play important roles in the determination of the value of a metachrome dye, and that both of these factors should be as high as possible, consistent with solubility.

Whether or not a chrome dye is suitable for application by the metachrome process depends empirically on a number of considerations; thus, a good metachrome dye fulfills the following conditions:

(a) It exhausts well from the metachrome dyebath in normal dyeing times.

(b) It does not precipitate either in the dyebath or on the surface of the fiber.

(c) It produces dyeings of fastness to washing, rubbing, and light equal to or superior to those produced by the afterchrome or chrome mordant processes.

(d) It forms a true dye-chromium complex on the fiber.—W.H.C.

Mothproofing

R. Burgess, J. Textile Institute 41, **P56-7, Feb., 1950.**

In controlling insect pests too much stress cannot be given to constant vigilance and the principles of hygiene. In storing woolen materials, efficient wrapping or the use of fumigants such as naphthalene and paradichlorobenzene is effective, but the most satisfactory protection is obtained by treating the goods with chemical substances which are toxic to insects.

Among the last-named are stomach poisons, such as neutral and acid fluorides, silicofluorides, dinitro-*a*-naphthol, pentachlorophenol (the active ingredient of Mystox), Lanoc CN (the equivalent of Eulan CN, which has been described as the sodium salt of pentachloro-dihydroxy-triphenyl-methane-sulfonic acid) and Mitin FF, which is a substituted urea containing a dichloro-diphenyl ether and a sulfonic group. Secondly, there are the contact poisons such as those containing dichloro-diphenyl-trichloro-ethane, commonly known as DDT.

While the mothproofing effect resulting from the application of most of these substances resists solvent dry-cleaning practice, fastness to all wet treatments is conferred by only two of the products, Lanoc CN and Mitin FF. DDT is recommended for protecting certain goods not subject to washing during use, and for the dry cleaning industry.—W.H.C.

The Structure of Textile Fibers XII. Alginate Fibers

E. E. Tallis, J. Textile Institute 41, **P52-5, Feb., 1950.**

The alginate rayons, of which calcium alginate is the most important, are regenerated fibers. The raw material is alginic acid which is a major constituent of the cell walls of many sea-weeds. Alginic acid, like cellulose, is a polymer which consists of long chains of a simple unit which in this case is mannuronic acid. The acid group in alginic acid makes it much more reactive than cellulose, and is the cause of the solubility of these fibers in solutions of soap, sodium carbonate, and other sequestering agents. The easy solubility in normal scouring baths, which ordinarily would be regarded as a serious drawback in a textile fiber, has been turned to good account so that calcium alginate yarns are used for producing special effects in fabric from which they are finally removed.

When the acid groups in alginic acid are neutralized with bases of univalent metals, such as potassium and sodium, then the salt is soluble in water, but if the base of a multivalent metal is used, then the salt is insoluble in water. Such salts are those of calcium, barium, aluminum, tin, beryllium and chromium. Beryllium and chromium alginate are both insoluble in solutions of weak alkalis. The fibers obtained from these two alginates have few or no ionic bonds, but co-ordinate links are formed instead, which are exceedingly stable. The treatment, however, produces a great degree of cross-linking through the co-ordinate bonds, so that the extensibilities of the fibers are very low while the tenacities are relatively high.

The knowledge of the fine structure of alginic acid and the alginate fibers is, at the moment, not very extensive.—W.H.C.

Level Dyeing

I. Teplitz, Textile Age 14, **76-81, March, 1950.**

Many factors enter into the production of level shades. A dye may be evenly distributed on a fabric and may still appear streaky, uneven, or blotchy, due to improper preparation of the goods, or because of migration of the dye during drying.

To attain level and even dyeing, all factors which promote equality of contact between dye and fiber must be used, and irregular, unequal actions must be avoided; this relates to the mechanics of feeding the dyestuff, and the number of times the bath passes through the textile or the textile through the bath, as well as to proper temperature control.

Emphasis is placed on the importance of the quality of "migration", or the ability of a dye to move from the bath into the textile and from the textile back into the bath. Some dyes possess this quality while others do not. Dyes with good migration qualities are preferred for beck dyeing; those with less migratory power are used for jig dyeing; and nonmigratory dyes for pad dyeing.

The author also discusses the addition of retarding or leveling agents to the dyebath, and the proper use of salt or Glauber's salt for purposes of exhaustion. He concludes: "The secret of level dyeing is in full and complete knowledge of the dyestuffs, their good and bad points, and the effective use of the good points and the minimization of the bad ones."—W.H.C.

• PATENT DIGEST •

PAUL WENGRAF

TRANSPARENTIZING—Resists Obtained by Preprinting Isocyanates or "Velan"-Compounds

D, 2, 02

Brit. P. 630,172
(Bleacher's Assoc. Ltd., Farrington, et al. Oct. 6, 1949)

Resists under sulfuric acid transparentized fabrics have been obtained by preprinting cellulose esters or methylolurea mixed with white or colored pigments. The goods are subsequently parchmentized and aftertreated with mercerizing lye whereupon the sulfuric acid parchmentizing operation is mostly repeated. The inventors state that the resists of the known type cannot withstand these treatments, as they are removed in the mercerizing step and thus are no longer effective in the second acid passage. The problem of finding a resist stable to repeated immersions in sulfuric acid and lye is said to be solved by the printing of a nonresinous nitrogen compound and rendering the surface of the cellulosic fiber durably water repellent in a following baking process. Examples of compounds which can be applied here are (1) quaternary ammonium compounds containing a tertiary N-base and (2) higher aliphatic isocyanates. Compounds, corresponding to group (1), are well known under the tradenames "Velan" or "Zelan". They are generally preferred to the isocyanates in the present process and compounds mentioned in group (2). According to one of the examples, a cotton fabric is printed with a paste containing 5% Velan PF, dis-

solved in methanol + n-hexanol, stirred in tragacanth thickener and mixed with an acetic acid solution of the dyestuff Alcian Blue 8GS (Imperial Chemical Industries). The paste is finally neutralized with sodium acetate. The printed goods are dried, baked in a chamber at 140°C. and transparentized as described above. An opaque bluish-green pattern on transparentized white ground results.

References:

Higher isocyanates printed as resists under vat dyeings have been proposed in Brit. P. 489,235 (Imperial Chemical Industries, Milburn). In a similar way these isocyanates as well as "Velan" products have been recommended in the same company's Brit. P. 492,157 as resists under Naphthol dyeings. It can be assumed that the resist effect obtained is partly based on a mechanical protection, partly on a chemical modification of the fiber's surface. It could not be expected, however, that prints of this type might resist a repeated sulfuric acid transparentizing effect combined with a mercerizing treatment.

Reference is further made to the process described in Brit. P. 577,233 (Cilander) comprising alternative treatments with sulfuric acid and mercerizing lye (see REPORTER, 1947, 100).

WATER REPELLENT FABRICS —Condensates of Higher Nitrils and Formaldehyde G, 2, 02

U. S. Pat. 2,493,360
(Sun Chemical Corp., Pollock-Zerner, Jan. 2, 1950)

An aliphatic nitril containing a long saturated chain is mixed with paraformaldehyde or a compound releasing formaldehyde under substantially anhydrous conditions and heated during agitation to about 60-65°C. Thereafter, a small amount of conc. sulfuric acid is added and stirring is continued as long as the temperature continues to rise (up to 85° C). The mass thickens considerably and is maintained in this condition for some hours more, after which it is further reacted with phosphorus trichloride. Reportedly, the constitution of the final product is not quite understood. Soluble or dispersible in alkalis, thereby forming a neutral solution which does not attack fibers impregnated with this composition, the product is cured at 140-150°C. for a short time. A durable water repellent finish results, not objectionably affected by scouring or dry-cleaning. One of the examples cites a reaction product obtained by condensing stearonitril with paraformaldehyde at 65°C. in presence of sulfuric acid. The condensate is cooled down and stirred with P Cl5. The product is soluble in ammonia plus monoethanolamine. A special advantage of the present invention is that the solution can be applied in alkaline media thus avoiding the very much dreaded tendering action of acid water repellent agents or other acid finishes.

References cited by the Patent Office, among others:

U. S. Pats. 2,285,948 and 2,315,135 (1942 and 1943, Ellis Foster, Rust): a water repellent finish obtained from the reaction product of formaldehyde, a long chain nitril and a higher fatty acid chloride further reacted with a tertiary amine (e.g., pyridine), and transformed thereby into a quaternary compound.

U. S. Pat. 2,333,623 (1943, Montclair Research, Rust): a water repellent agent prepared from a long chain fatty acid chloride, an aliphatic or aromatic nitril + formaldehyde reacted with pyridine (see above) *but in one single operation.*

U. S. Pat. 2,386,586 (1945, Eastman Kodak): vinylcyanides prepared from formaldehyde and an alkyl cyanide by a dehydrating process. No special application of this invention in treating textiles is disclosed.

U. S. Pat. 2,386,631 (1945, Warwick Chem., Pingree): refers to U. S. Pat. 2,285,948 (see above); long chain fatty acid chlorides substituted by reaction products of waxes (Montan, Candelilla, Carnauba) with phosphorus trichloride.

PIGMENT PRINTING—Oil-in-Water Emulsions Containing the Pigment in the Aqueous Phase D, 2, 07

U. S. Pat. 2,494,810
(Geigy A. G., Hobday-Goodall, Jan. 17, 1950)

The use of printing emulsions of the water-in-oil type is said to have certain disadvantages (e.g., fire and health hazards); moreover, highly expensive solvents have to be used. The inventors prefer oil-in-water emulsions for printing textiles as well as leather, particularly chrome leather. Generally these emulsions contain the organic solvent in the dispersed (lacquer) phase, and the binding agent (e.g., a resin condensate) in the aqueous phase, while the pigment can be incorporated either in the aqueous or in the oil phase. It has been observed that, in both events, prints fast to wet rubbing can be obtained; however, these prints cannot be prepared in higher concentrations. The innovation protected by this patent consists of an incorporation of the binder in the oil phase and the pigment in the continuous (aqueous) phase, resulting in highly concentrated prints which are at the same time fast to rubbing. Furthermore, these emulsions can be readily diluted. It is rather difficult to prepare an emulsion as described above because pigments, dispersed in the aqueous phase, have the tendency to migrate into the oily phase upon the addition of organic solvents. A satisfactory solution has been found using a water soluble alkyd resin reacted with ammonia or alkylolamine as a dispersing agent. This alkyd resin has to be of the "non-convertible type" (i.e., a condensate which cannot be transformed by heat or oxydizing into an insoluble compound). The binder, on the other hand, contains a solvent soluble resin (formaldehyde + urea or melamine) or an alkyd resin of the "convertible" (thermohardenable) type. The organic solvent must thoroughly dissolve the binder but not take up the pigment to a large extent; benzene, toluene, xylene, and white spirit are especially recommended as solvents. The fabric is baked after printing for about 10 min. at 140°C. The fastness to rubbing tests in wet or dry state gave excellent results. The procedure consists, according to one of the examples, of dispersing a colored pigment (Irgalite Orange P paste) in water in the presence of a nonconvertible alkyd resin, cellosolve, oleic acid, triethanolamine and methylcellulose. A solvent soluble urea-formaldehyde resin, dissolved in xylene, is slowly stirred in.

References cited by the Patent Office, among others:

U. S. Pat. 2,364,692 (1944, Interchemical Corp.): pigment printing emulsions comprising a multiple phase composition in which water is one phase, a concentrated pigment resin solution, a second, and a lacquer of very low solid content, the third phase.

U. S. Pat. 2,342,642 (1944, Interchemical Corp.): dyeing cloth with pigmented lacquer emulsified in water. A solvent-soluble urea-formaldehyde resin is dissolved in xylene and mixed with an alkyd resin solution in pine oil plus a hydrocarbon solvent ("Solvesso"). This mixture is dispersed in water in presence of a higher alkylsulfate.

LUBRICATING WOOL—Composition of Amides, Esters and a Non-Resinifying Oil A, 2, 02

U. S. Pat. 2,496,631
(Nopco Chemical Co., Leupold-Kelley, Feb. 7, 1950)

Preparatory operations in manufacturing wool cloth consist of washing the fleece, oiling, spinning, steaming and crabbing, fulling in a soap solution and deterging before the material can further be processed. This specification states therefore that three different treatments are generally carried out in separate steps: lubricating, fulling and deterging. The inventors aim at combining these treatments into one single operation by applying a *self-scouring* and *self-fulling* lubricating mixture. The composition contains (1) a non resinifying oil (2) a fatty

acid condensate with an alkylolamine and (3) a fatty acid ester. Many different compounds can be used in each of these three groups.

The nonresinifying oils include mineral oils and blown or hydrogenated oils. Blown vegetable oils (peanut or soybean oil) proved best while some mineral oil might be added as an inexpensive diluent.

The alkylolamine condensates with fatty acids are characterized by a molecular proportion of two or more mols of the amine to one mol of the acid. This condensate cannot be a simple amide; it is merely termed as a "condensation product". Diethanolamine and coconut oil fatty acids are preferred as components.

The esters applied in this composition are based on low titer fats. They should have a melting point below 25°C. Examples are methyloleate, isobutyl oleate or the like. The proportions of the ingredients of these three groups can be varied in a wide range but preferred amounts are given as 25-40% of the nonresinifying oil, 20-50% of the "Condensation product" and 25-40% of the esters. The constitutents are heated from 2-3 hours to 60-80° C. whereupon a clear, aqueous suspension results. Boiling of this emulsion, which breaks at higher temperatures, should be avoided. An example calls for mixing 40 p. of the "condensate" (one mol coconut acids heated with two mols diethanolamine at 170°C.), 30 p. methyl-oleate and 30 p. blown peanut oil. Wool flannel was impregnated with a 3.8% aqueous emulsion, containing the above compounds. Washing in water of 140°F. for a half hour was sufficient to remove the extractable oily substance to a residual amount of 0.3%. This impregnation was not only suited for replacing any other lubricating, fulling or deterging agent but, moreover, was antistatic.

References cited by the Patent Office, among others:

U. S. Pat. 2,334,852 (1943, Alrose Chem. Co.) a textile treating bath consisting of an aqueous solution of an amido condensate of stearic acid (or the like) with 2-amino- 2-ethyl-1-3- propane diol or tris-(hydroxymethyl) aminomethane.

U. S. Pat. 2,333,770 (1943, Eastman Kodak): a lubricating and softening composition containing triethanolamine monoacetate—dipropionate.

U. S. Pat. 2,096,705 (1937, Heckethorn, et al.): rayon fibers lubricated by impregnating with a water soluble (ethanolamine) soap and an organic solvent.

U. S. Pat. 1,985,687 (1934, I. G. Farben): fibers coated with a composition containing an amide of hydroxy-ethylamine with oleic acid or amides, esters or esteramide derivatives from a higher (over-7 C) carboxylic acid plus an alkylolamine.

Other references:

Brit. P. 454,559 (I. G. Farben): a recommendation of fatty acid amides (e. g., oleylsarcoside instead of olive oil) as wool lubricants. Ger. P. 621,396 (I. G. Farben) proposes for the same purpose monoethanolamine condensates; thus, amide-type products with higher fatty acids.

National Oil Products suggested in U. S. Pat. 2,340,881 (1944) the use of condensates of ethanol ethylene diamine and coconut oil as lubricating agents.

STABILIZING RAYON FABRICS—Short Immersion in Strong Caustic Solution G, 2, 04

U. S. Pat. 2,497,519

(Alrose Chemical Co., Stevenson-Beer, Feb. 14, 1950)

Strong alkaline solutions are known to cause less damage to regenerated cellulose (rayon or spun rayon) than diluted ones. Thus, rinsing of rayon fabrics which have been prepared with strong alkalis (like in conventional mercerizing operations) has to be considered more critical than the padding process by itself. The present specification states that not only a considerable loss in strength but also in yardage (over 20%) occurs in a standard alkalinizing process. Moreover, a shrinkproofing effect obtained this way proved to be unstable since the goods would further shrink in repeated laundering operations. Stabilizing cellulosic fabrics with resin precondensates likewise has some disadvantages such as discoloration, harsh hand, retention of chlorine in subsequent laundering, objectionable odor of excess formaldehyde, and so on. The inventors have developed a stabilizing process especially for rayon fabrics based on an alkaline pretreatment, thus omitting any resin type preparation. It has been observed that relatively strong solutions of lye (NaOH, KOH) of 30-50%, applied to the goods for a very short time (generally for a few seconds) at temperatures between 20-60°C. and neutralized by acids or even by a hot saturated bicarbonate solution without intermediate rinsing, cause dimensional stabilization of the fabrics. The total loss on yardage is given as 5% compared with an average loss of 10-20% occurring in known stabilizing methods. A characteristic feature of this process is a short skying operation (also for seconds only) inserted between the caustic treatment and the neutralization. The goods have to be handled during these phases in the open width, being in a semiplastic state, and in this step they are easily damaged by pressure. Even water drops should be carefully avoided until neutralization is complete. All operations are carried out under minimum tension in the length dimension. Agents such as sodium silicate protect the fabrics from a sudden attack by the lye. Other wetting agents (phenols, optionally blended with Cellosolve) are also added. According to one of the examples a gray, scoured or vat dyed rayon fabric is padded in a 30-50% NaOH solution containing the auxiliaries mentioned above at 20-65°C. for 1 to 2 seconds, squeezed to a 90% pickup, skyed for 10-20 seconds, immersed in 5-10% sulfuric acid, washed, neutralized with hot bicarbonate and rinsed.

References cited by the Patent Office, among others:

U. S. Pat. 2,112,499 (1938, Lilienfeld): the treating of high tenacity viscose threads with 5-10% NaOH to allow free shrinkage, thereby increasing the extensibility.

U. S. Pat. 1,989,100-101 (1935, Lilienfeld): reacting on viscose with NaOH + sodium sulfide or with NaOH of not less than 3.6% strength.

Brit. P. 560,378 (1944, Celanese): obtaining regenerated cellulose by saponifying cellulose acetate ("Fortisan"). This fiber is immersed for a short time in a highly concentrated lye of mercerizing strength, quickly removed and washed. This results in a considerable increase in tensile strength.

Other reference:

U. S. Pat. 2,057,822 (Drechsel): an antishrink process, based on impregnating rolls of cellulosic fabrics with alkalis in relaxed state. This method does not provide for immediate neutralization nor does it suggest working with high concentrated lyes at elevated temperatures as recommended in the present patent, which apparently covers the process known in literature as "definizing".

PIGMENT PRINTING—Oil-in-Water Emulsions—Caseinates in the Aqueous Phase D, 2, 07

U. S. Pat. 2,498,454

(Ciba Ltd., Schibler, Feb. 21, 1950)

This patent apparently corresponds to Brit. P. 628,882 (REPORTER, 1950, 190).

References cited by the Patent Office, among others:

U. S. Pat. 2,453,752 (1948, Stein, Hall): pigment printing. The pigment is dispersed in an emulsion, the inner phase containing a vulcanized vegetable oil (e.g., vulcanized rape oil) in a water insoluble solvent, the continuous phase consisting of an aqueous dispersion of urea-formaldehyde; thus, an oil-in-water emulsion to which the pigment has to be added. (See REPORTER, 1949, 325).

U. S. Pat. 2,402,032 (1946, American Cyanamid): a finishing preparation consisting of a methylolmelamine composition blended with other resin condensates.

U. S. Pat. 2,372,986 (1945, Ciba): purifying technical casein by emulsifying casein previously solubilized by a hydrotropic agent (e.g., urea, sodiumbenzoate)

with ligroin and isobutanol and drawing off the purified casein solution after breaking this emulsion.

U. S. Pat. 2,361,277 (1944, Ciba): printing emulsions. The oil phase contains a solvent soluble amino resin and casein in the continuous (aqueous) phase. This patent covers the manufacture of "Orema" dyes and is parallel to Brit. P. 544,157, quoted in REPORTER, 1950, 150.

SHRINKPROOFING WOOL—Maleic Anhydride Copolymerized with Acrylic Acid Ester A, 2, 04

U. S. Pat. 2,499,653

(American Cyanamid, Kropa-Nyquist, March 7, 1950)

This specification states that some of the shrinkproofing or antifelting treatments of wool are known to damage the fiber and to reduce its wearing resistance; generally, shrinkproofing effects can only be attained at the sacrifice of other desirable properties of the fabrics such as the destruction of the characteristic soft hand of the material. In contrast, the present process, an impregnation with a lower alkyl ester of acrylic acid copolymerized with maleic anhydride, is claimed to impart not only increased shrinkage resistance but also improved tensile strength while the original soft touch is not impaired. This effect is durable even after several launderings in soap solution. The proportions used are 2-20% maleic anhydride and 80-98% lower alkyl—(C_1-C_4)—acrylate. These monomers are polymerized in the presence of a catalyst (e.g., an organic or inorganic peroxide, preferably benzoyl peroxide) and in the absence of water, either in an organic solvent solution or by mixing the nondiluted components and heating until polymerization takes place. The products thus obtained are termed "reactive" copolymers. An example cites the heating under reflux of a solution of 10 p. maleic anhydride with 90 p. ethylacrylate, 0.2 p. benzoylperoxide and 33 p. toluene and the impregnation of a wool sample with a 10% solution of this copolymer in toluene. The dried specimen was cured at 240°F. After a cycle of 5 washings in soap solution the shrinkage was measured at 8.3% while nontreated wool shrank under equal conditions about 38%.

References cited by the Patent Office, among others:

U. S. Pat. 2,418,688 (1947, National Dairy Products): production of an elastic product by copolymerization of methyl acrylate or another alkyl acrylate with maleic anhydride.

U. S. Pat. 2,399,084 (1946, Du Pont): obtaining of shaped protein structures from water-insoluble globular protein (e. g., sulfuric acid casein) combined with a styrene-maleic anhydride in slightly acid condensation (pH about 5) and thereafter neutralized.

U. S. Pat. 2,358,387 (1944, Celanese): increasing the safe-ironing point of acetate cellulose fabrics in knitted or woven form by treating them with polycarboxylic acids (e.g., phthalic anhydride, adipic acid) in an organic solvent to introduce carboxygroups which combine with free OH- groups of the filaments.

U. S. Pat. 2,329,622 (1943, Cyanamid): rendering wool fabrics resistant to felting by applying alkylated methylolmelamines.

It should be noted that the additional effect, increased tensile strength (up to 35%), is unexpected and very surprising.

Correction

The correct title for U.S. Pat. 2, 492,574, which appeared in the April 17, 1950 issue under the title of "Drying Apparatus for Fabrics in Rope Form", should be "Apparatus for Fluid Treating and for Guiding Parallel Traveling Textile Strands".

TRADE NOTES • NEW PRODUCTS

• Du Pont Collection of 100,000 Foreign Fabrics

A collection of over 100,000 foreign fabrics of natural and synthetic fibers is being made available by the Du Pont Company to the textile trade for their use. Gathered over a period of nearly twenty-five years by the Fabric Development Section of the Rayon Division, this group is believed to be the largest assembly of fabric samples in this country. Cataloguing has just been completed, with eight broad divisions and fifty-nine subdivisions.

Because of the comprehensive scope of the collection, its accessibility, and the ease with which a range of specific fabric types can be consulted, it is expected that this collection will be extensively used as inspiration for new fabrics—weaves, colors, and print designs.

The eight basic groups are plain weaves, twills, satins, dobby weaves, metallics, jacquards, knits, and laces.

The samples are mounted on cards for easy reference. Each sample is identified as to basic group and subdivision.

To illustrate how this collection may be utilized, a step-by-step exhibit at a recent press preview showed a procedure of translating a foreign dobby weave into a group of new and interesting domestic fabrics.

First comes selection of a foreign fabric to serve as inspiration for new fabric developments in viscose rayon, novelty thick and thin rayon, and other synthetic yarns, sometimes in mixture with natural fibers. The weave is analyzed in detail. Next, a memorandum is exhibited explaining the fabric choice. Third, weaving and other instructions for the new fabrics envisioned are shown as sent to the Newport Weaving Laboratory of Newport, Delaware, a small-scale mill with full-size equipment for producing experimental fabric samples. This Laboratory is owned and operated by the Rayon Department of the Du Pont Company. Also displayed are a blow-up of one of the new weaves, a gray goods sample as it came from the loom, the boiled off hand-dipped piece, and dyeing instructions to the finisher. The final step in the exhibit is a group of commercially finished samples.

This collection may be seen by appointment with the Fabric Development Section of the Rayon Division, Du Pont Company, 11th Floor, Empire State Building, New York City.

• New Hilton-Davis Naphthol

A new naphthol, AS-EL, has been added to the line of naphthol dyestuffs offered to the textile industry by the Hilton-Davis Chemical Company Division of Sterling Drug Inc., Cincinnati, Ohio.

Available for immediate shipment, AS-EL is described as a naphthol producing reds and scarlets of "unusual brilliancy, excellent light fastness, and good fastness to chlorine, peroxide, and Kier boiling."

The addition brings to 14 the number of naphthols currently on the Hilton-Davis list. These will be further expanded, according to Nelson S. Knaggs, vice-president in charge of sales.

United States Rubber Company

New U. S. Rubber Textile Research Laboratory, Winnsboro, S. C.

• $250,000 Research and Development Lab.

A new $250,000 textile research and development laboratory was opened last month by United States Rubber Company at Winnsboro, S. C. Dedication of the laboratory was marked by a series of open house events for employees and residents of the area, which began with a visit by a group of executives headed by Harry E. Humphreys, Jr., president of the company.

Opening of the laboratory brings together a staff of more than 25 research men and women in a consolidation move designed to improve and expand the company's textile operations. Practically all the company's textile research and development work will now take place at Winnsboro except research on asbestos products, which will continue at Hogansville, Ga., home of the company's Asbeston plant.

Development activities at the new laboratory will be closely coordinated with the product control laboratories of the company's mills, with the general laboratories at Passaic, N. J., and the fundamental research conducted by such organizations as the New Orleans laboratory of the United States Department of Agriculture and the Textile Research Institute at Princeton, N. J.

Pilot plant facilities to serve all mills of the textile division have been installed in the laboratory. These facilities are located in a large processing area designed for work on special yarn and fabric projects.

Other facilities in the building include a physical testing laboratory, chemical laboratory, machine shop, statistical department, technical library, conference room and various offices.

The laboratory is a one-story building located on a hillside just south of the company's Winnsboro Mills. It is a red brick structure of functional design with limestone trim and aluminum window sashes. An unusual architectural feature is its early American entrance modeled after a Christopher Wren doorway at the Winnsboro town hall. S. H. Sherman, development manager for the textile division, is in charge of the new laboratory.

In addition to Mr. Humphreys, the company group which visited the laboratory included W. H. Cobb, vice-president, Dr. S. M. Cadwell, director of research and development, H. Gordon Smith, vice president and general manager of the company's textile division, and a group of 15 representatives of the general laboratories and the development departments of the company's tire, mechanical goods, footwear and Naugatuck chemical divisions.

• Burlington Display of "Orlon" Fabrics

Burlington Mills Corporation recently presented for the first time a wide variety of fabrics and products for numerous end-uses made exclusively from or in combination with Du Pont's new "Orlon" acrylic fiber.

Robert L. Huffines, Jr., Burlington's merchandising head, in tracing the development work on fabrics made of "Orlon," said that the key step in opening up the many uses of the fiber for apparel was the initial work in solving the problem of dyeing filament "Orlon." This, he said, was done by the Burlington research and development staff. Work done by Burlington on experimental quantities of "Orlon" yarn points to an exciting future, for it can be used in many phases of the apparel, home decorating, and industrial fields, he said. Further, "It will supplement existing man-made fibers and yarns, and expand the already growing market for fabrics made of such yarns and fibers. It probably will find its biggest use in fields now largely dominated by natural fiber fabrics."

The two major features of the presentation included a fashion show and exhibit. Some twenty women's wear garments and a man's suit were modeled, accompanied by a brief commentary noting the enthusiastic reactions of the various New York designers who originated the collection of the several garments.

Among the outstanding characteristics and qualities of fabrics made of "Orlon" cited by Mr. Huffines were:

1. Possession of a warm hand and comfortable feel, but lightness in weight, with good draping qualities. Fabrics made of "Orlon" staple fiber are particularly suitable for fall and winter wear because of the warmth quality.

2. Readily washable and launderable, removing the necessity of having garments dry cleaned.

3. Dirt and soil is easily removable through washing.

4. Does not shrink or distort in washing.

5. Quick-drying; requires little ironing.

6. Not subject to gas fading.

7. Most resistant of all known fibers to tendering by sunlight.

8. Cuts and sews easily with a minimum of puckering.

9. Not attacked by mildew.

10. Not attacked by moths.

11. Possession of outstanding qualities of wrinkle resistance and recovery from mussing without the neecssity of treating with specialized finishes.

Burlington officials said that small experimental yardages of fabrics of "Orlon" were now being made. However, small commercial shipments cannot be expected until late this year when the Du Pont filament "Orlon" plant at Camden, S. C., will be in production. In addition, the Du Pont company recently announced that an "Orlon" acrylic staple fiber plant will be constructed in the near future. Until this commercial production is available, small continuing supplies of the staple fiber for market development work will come from pilot facilities at Waynesboro, Va.

• Annual "March of Time" Dinner

With a total service of more than 7000 years, 370 employees of the Grasselli (Linden) Works Division of General Aniline & Film Corporation were guests on March 31 at the Fifth Annual "March of Time" dinner held at the Elizabeth Cartaret Hotel. Eash guest had been employed 15 or more years, 11 at the New York City office and the rest at the company's 100-acre plant located on the Arthur Kill. The plant will observe the 35th anniversary of its founding in July.

Six employees, each with the company for 30 years were awarded gold watches by Jack Frye, president of the corporation, and eight others received diamond studded emblems commemorating a quarter-century of service. Seven others with more than 30 years service, who had received gold watches in previous years, were also present.

Other speakers at the affair were Vice President Chandler T. White, of New York, and Plant Manager Russell I. Baker, of 1 Mapes Avenue, Newark. Paul L. Davis, personnel relations manager, of Redfield Village, Metuchen, was master of ceremonies. Mr. White and Mr. Baker will observe 30th anniversaries with the company this year.

• Celanese Slide Series

The first three in a series of educational slide films produced by Celanese Corporation of America on rayon yarns and textiles for showing to department store personnel were recently completed, according to Albert S. Dempewolff, director of advertising at Celanese. Titie of this first series is "A Modern Yarn For Modern Living".

A preview of the film series revealed that it is concerned with a graphic presentation of appropriate answers to questions that are of importance to the consumer. Its aim is to arm the retail salesperson with factual information which will enable her to sell more effectively the many textiles made of chemical yarns. Part one is concerned with how rayon yarn is made and its characteristics; part two, how rayon fabrics are made and their characteristics; and, part three, the care and handling of rayon fabrics. Subsequent films will cover such subjects as printing and dyeing, lingerie fabrics, and similar subjects, all aimed at helping department store personnel to be more completely informed on rayon.

Mr. Dempewolff indicated that some consideration is being given to releasing the series, perhaps with some few revisions to consumer groups through the Company's educational department.

The Celanese slide film series is a joint venture of the Company's Advertising Department and its agency, Ellington & Company, Inc. Miss Frances Raftery is account executive. Transfilm, Inc. are the producers.

• "Fabric X" to be Called Milium

Milium has been chosen as the trademark name to designate the new "warmth without weight" fabric development of Deering, Milliken & Company, Minot Milliken, vice president of the company, recently announced. The development was previously identified as "Fabric X."

"Milium will identify garments and fabrics of all kinds whose warmth-retention qualities have been greatly increased by the new process, without the usual increase in weight," explained Mr. Milliken.

Rayon satins, twills and crepes are now being treate dby the process at Excelsior Mill No. 4 of Deering, Milliken & Co. near Pendleton, South Carolina. These will reach the public this fall as linings of women's and men's coats, sportswear, and children's outerwear.

Applications of Milium in bedding, drapery and other fields will be developed later. Deering, Milliken & Co. plans to license other companies under its patents but will confine production initially to its own facllities.

Young & Rubicam, Inc. has been retained to handle advertising and promotion of the Milium trademark. Both trade and consumer programs are in preparation.

Initial work on the process was done by James H. Rand III, noted Cleveland, Ohio scientist. Deering, Milliken & Co. financed the research required to perfect it.

• Nopco Forms Pacific Division

Nopco Chemical Company, Harrison, N. J., makers of a broad line of industrial chemicals and bulk vitamin and pharmaceutical products, has announced formation of its new Pacific Division. Announcement was made by Nopco president Thomas A. Printon from the company's home office at Harrison, New Jersey.

The functions of this new division will include sales and all other company activities for the eleven wes ernmost states of California, Washington, Oregon, Idaho, Montana, Arizona, Nevada, Utah, Colorado, Wyoming and New Mexico as well as the province of British Columbia. In making the announcement, Mr. Printon pointed out that increased sales in this area, plus the rapid industrial expansion taking place in the west, make it important for the company to establish a permanent base for its operations on the Pacific Coast at this time. Special emphasis will be placed on the company's industrial chemical sales.

The Pacific Division will be headed by Perc S. Brown, a company vice-president, assisted by Harold A. Swanson as general sales manager. Arthur V. Swarthout, formerly of the Fiscal Department, will handle the extensive market survey work required. Organization details and arrangemnets are now being worked out at the company's Harrison office. Until they are complete the company plans no change in its present western sales set-up.

• T.R.I. Guests Conclude Visits

Dr. Joel Lindberg, newly appointed Director of the Institute for Applied Textile Research in Gothenburg, Sweden, has concluded his work as a guest scientist in the Textile Research Institute Laboratories in Princeton, New Jersey. During his stay in the Institute Laboratories, he carried on studies of the damaging effects of shrink-resistant treatments on wool which were made possible by availability of the specialized equipment in the Institute Laboratories.

Dr. F. C. Toy, Director of Shirley Institute, Manchester, England, visited the Princeton Laboratories of the Textile Research Institute on Monday, April 24. At a luncheon given in his behalf by Dr. J. H. Dillon and members of his staff, Dr. Toy spoke informally on the effective conduct of cooperative textile research.

The success of Shirley Institute, Dr. Toy stated, stemmed largely from the early emphasis placed on a sound fundamental scientific research program thus providing a fund of pure knowledge upon which technologists could draw. Later the second vital ingredient to success was added—close and continuing liaison with the textile industry.

Both men spent a good amount of time in visits throughout the country. Dr. Toy, who sailed for England on April 28 spent approximately one month in the U. S. visiting textile research organizations. He expressed pleasure in the progress made by the Textile Research Institute since his last visit here in 1946 and was particularly pleased by the fact that Textile Research Institute had adhered closely to the above principles during the past four years thus providing a sound foundation for future development and growth. This growth with its inherent element of greater service to the textile industry will lead, he stated, to increased industry support for the Institute.

After arriving in this country on February 14, Dr. Lindberg made a tour of various textile research centers, including the Southern and Western Regional Research Laboratories of the United States Department of Agriculture, some of the du Pont laboratories, Lowell Textile Institute, Alexander Smith and Sons Carpet Company, The Wool Bureau, Inc., and Forstmann Woolen Company, which was followed by several weeks of intensive study in the Institute Laboratories. He returned to Sweden from New York aboard the liner Gripsholm on April 14.

• I. R. I. Medal to Dr. Jewett Posthumously

The 1950 Medal of the Industrial Research Institute, Inc., has been presented posthumously to Dr. Frank B. Jewett, for many years vice president of the American Telephone and Telegraph Company and former president of the National Academy of Sciences. The medal was accepted by Dr. Jewett's son, Frank B. Jewett, Jr., Director, Development and Business Administration, General Mills Research Laboratories, at a luncheon preceding the Intitute's spring meeting at the Westchester Country Club, Rye, New York.

J. H. Schaefer, president of the Institute and vice president of the Ethyl Corporation, presided and the presentation was made by H. Earl Hoover, vice president, The Hoover Company, and past president of the Institute.

The citation accompanying the award,

which is made for outstanding accomplishment in the management field of industrial research, reads:

"Dr. Frank Baldwin Jewett for his leadership in building one of the first and most distinguished industrial research organizations and for his accomplishments in the work of organizing American research effort in time of national emergency."

• United States Testing Elects

The United States Testing Company, Inc. held its annual Stockholders' Meeting at the corporation's New York Office on April 19th, and the following Directors were elected:—

J. P. T. Armstrong, Chairman, Executive Committee, Belding Heminway, Inc.; A. L. Brassell, President, United States Testing Co., Inc.; G. H. Conze, President, Susquehanna Mills, Inc.; Jarvis Cromwell, President, William Iselin & Co., Inc.; D. E. Douty, Chairman, United States Testing Co., Inc.; B. C. Dunlop, Director, Avon-Allied Products Corp.; William Frazer, Treasurer, J. P. Stevens & Co., Inc.; Otto Froelicher, Treasurer, The Schwarzenbach Huber Co.; James A. Goldsmith, President, Hess, Goldsmith & Co., Inc.; William H. Hubbard, Trustee & Treasurer, William Skinner & Sons; Alexander F. Ix, President, Frank Ix & Sons, Inc.; James A. Linen, Vice President, Time, Inc.; Melvyn G. Lowenstein, Lowenstein, Pitcher, Amann & Parr; Henry E. Stehli, President, Stehli & Co., Inc.; H. O. Thayer, Development Department, E. I. duPont de Nemours & Co.; and S. B. Walker, Secretary-Treasurer, United States Testing Co., Inc.

The first meeting of the newly elected Board of Directors was held at the Hoboken Offices of the Corporation on April 26th, and D. E. Douty was again elected Chairman of the Board. The following Officers of the United States Testing Comuany were elected:—

President—A. L. Brassell; *Vice President*—H. M. Block; *Vice President*—J. A. Nary; *Vice President*—G. J. Esselen; *Secretary-Treasurer*—S. B. Walker.

• Coupe Appointed Rexo Rep.

Albert Malick, president of Rexo, Inc., Elizabeth, New Jersey, has announced the appointment of Joseph Coupe of Pawtucket, Rhode Island as its representative in the New England area, selling and servicing specialties for dyehouses and bleacheries.

Mr. Coupe was inspector in charge of procurement in that area with the A. A. F. during the war. For the past five years, he was textile technician with Pondel Fabrics and C. W. Carvin Company.

Dr. Ivan Gubelmann

• Dr. Gubelmann Retires

Dr. Ivan Gubelmann, assistant to the general management of Du Pont's Organic Chemicals Department, has retired from the company. Since 1932, he has served in Wilmington in various capacities, including those of chemical director for the department and manager of its Dyestuffs Division.

Dr. Gubelmann was born in Neilen, Switzerland, July 7, 1886. After graduation from the Federal Technical University of Zurich in 1909, he supervised laboratory students in the preparation of dyestuffs and other chemicals while studying for the degree of Doctor of Technical Science.

He received the degree in 1912 and came to the United States shortly afterward. He obtained his first position at Monsanto Chemical Works serving as research and operating chemist until 1916.

In that year, seeing an opportunity to participate in the early efforts to establish an American industry in dyestuffs, his major interest as student and instructor, he became chief chemist of the Newport Chemical Works and the Newport Hydrocarbon Company, both of which were active in this and related fields of chemistry.

Early in 1920, Dr. Gubelmann was made a member of the board of directors and chemical director of the Newport Company and, in 1923, technical director and vice president in charge of research and manufacturing activities of the firm's plants at Carrollville, Wis., and New Brunswick, N. J.

In 1932, a year after the Du Pont Company acquired the chemical business of the Newport Company, Dr. Gubelmann came to Wilmington as special assistant to the manager of the Dyestuffs Division. He became chemical director of the Organic Chemicals Department in 1933, assistant manager of the Dyestuffs Division in 1938, manager of the division in 1941, and assistant to the general management of the department in 1948.

Dr. Gubelmann has written a number of technical articles on the dyestuffs industry and other organic chemicals subjects. Approximately 100 patents issued in his name deal with the manufacture of dye intermediates and dyes, resin derivatives, wetting agents, synthetic camphor, and other chemical products.

• Dr. Andrews Appointed Director

Announcement of the appointment of Dr. D. B. Andrews as Director of the Process Development Department of the Rensselaer, N. Y., plant of General Aniline & Film Corporation was made recently by Dr. Cary R. Wagner, Vice President in Charge of Operations for the corporation. Dr. Andrews succeeds Dr. J. C. Moessinger who is now devoting all of his time to his duties as Technical Coordinator of the company's foreign activities.

Dr. Andrews attended Cornell University where he received the degrees of B.S. in 1933 and M.S. in Chemistry in 1934. He obtained a Ph.D. from the University of Michigan in 1938. He joined General Aniline in 1937 as a chemist at the Grasselli, N. J., plant. In May 1948 Dr. Andrews was appointed Assistant Director of the Process Development Department.

Dr. Moessinger had been associated with the Rensselaer plant for the past 29 years. He received his education in his former homeland, Switzerland, where he received his Ph.D. at the University of Geneva in 1920. He came to America in 1921 when he first became associated with the plant as a research chemist, later heading the Process Development Department. He is a counselor for the Eastern New York State Section of the American Chemical Society, a fellow of the American Institute of Chemists, American Association of Textile Chemists and Colorists, Albany Society of Engineers, American Ordinance Association, New York Chemists Club and Torch Club.

• Gen. Peckham Heads NYQMPA

Brig. General Howard L. Peckham has assumed command of the New York Quartermaster Procurement Agency, 111 East 16th Street, New York City. General Peckham, who has held many important and distinguished assignments during his 32 years of Army service, returned from Paris, France, where he headed the American Graves Registration Command, European Area, for almost three years.

The arrival of the new Commanding General relieves Colonel R. A. Howard, Jr., of his interim assignment as Commander of the New York Agency, permitting him to return to fulltime duty as Commanding Officer of the Chicago Quartermaster Purchasing Office, a post he has held since August 1947.

• Poor Honored As Head of NAFTF

At a luncheon sponsored by the Textile Square Club recently, Arthur G. Poor, head of the National Association of Finishers of Textile Fabrics, was honored by more than 175 people at the New York Masonic Club.

Mr. Poor, of Standard Bleachery & Printing Co., received congratulations from William P. Fickett, president of the Textile Fabrics Association, W. Ray Bell of the Association of Cotton Textile Merchants, C. Norris Rabold, president of the American Association of Textile Chemists and Colorists, and Dean Lewis, president of the Silk & Rayon Printers & Dyers Association. Brief remarks were also made by Max J. Lovell, National Association of Shirt, Pajama & Sportswear Manufacturers and Dr. George E. Linton, dean of the Textile Department, Fashion Institute of Technology.

Harry Riemer, president of the Textile Square Club presided. Others at the head table included William Berry, Riegel Textile Corp., past president of the NAFTF; Irene Blunt, National Federation of Textiles, Inc.; Howard J. Fletcher, SRPDA; Herbert Morrow, Calco Chemical Division, American Cyanamid Co., and William H. Harriss, Cluett, Peabody & Co., Inc.

Mr. Rabold, A.A.T.C.C. president, recalled the improvement in the position of technical personnel over the years with the increasing acceptance and promotion of scientific developments. He pledged full cooperation of the A.A.T.C.C. with the NAFTF for the advancement of wet finishing.

• Rodney Hunt Personnel Changes

Two personnel changes in the Textile Machinery Division of the Rodney Hunt Machine Co. have been announced by B. M. Jones, Manager.

Harry F. Creegan, who has represented the company in the Middle Atlantic territory until recently, has been appointed Assistant Sales Manager with headquarters in the home office in Orange, Massachusetts. Mr. Creegan, formerly with American Viscose Corporation in their Textile Research Department, has been with the Rodney Hunt Machine Co. two years.

M. Gilbert Hopkins will replace Mr. Creegan in the Middle Atlantic territory. He has spent twelve years in the company including nine in the Engineering Department and the last three in Sales covering the New York State and Northern New England territory.

Ford Ballantyne, Jr.

• Wyandotte Elections

Election of Ford Ballantyne, Jr., to a vice presidency of Wyandotte Chemicals Corporation has been announced by Robert B. Semple, president.

Mr. Ballantyne, 34, a descendant of Capt. John Baptiste Ford, founder of the company, has been assistant to the president and secretary of the corporation.

William Day, 45, head of the patent section of the research and development division, was appointed assistant to the president, and director of the company's legal activities.

William Day

The promotions followed the annual shareholders' meeting.

Officers reelected include: Emory M. Ford, chairman of the board, Robert B. Semple, president, Ford Ballantyne, Sr., vice president and treasurer, Ford Ballantyne, Jr., secretary, S. T. Orr, vice president-manufacturing, Bert Cremers, vice-president-Michigan Alkali Sales Division, G. W. Schwarz, vice president-controller and T. H. Vaughn, vice president-research & development.

Mr. Ballantyne, Jr., joined Wyandotte in 1942 after several years as a member of the staff of the National Bank of Detroit. He attended Williams College and was graduated from the college of business administration of Lehigh University.

His first assignment at Wyandotte was to the staff of S. T. Orr, vice president in charge of manufacturing; following which he became an assistant to the general vice presidents; assistant vice president; and in April, 1949, assistant to the president and secretary.

Mr. Day, a chemical engineer and attorney, came to Wyandotte Chemicals in 1944 from a partnership in the Cleveland patent law firm of Oberlin, Limbach and Day. He has had wide experience in the chemical, rubber, plastic machinery and machine tool industries.

• Pfeffer Elected Vice Vice President

Edward C. Pfeffer, Jr. was elected vice president in charge of research, Cluett, Peabody & Co., Inc., and Jerome C. Braden was named to the combined post of secretary and treasurer at the annual meeting of stockholders of the company at Troy, New York on April 5.

Mr. Pfeffer joined Cluett, Peabody & Co., Inc. in 1942 and was appointed Director of Research in 1943. Since 1948 he has headed the new Research and Development Laboratory in Troy. Mr. Pfeffer was graduated from Mass. Institute of Technology as a chemical engineer. He is a member of the American Chemical Society, the Textile Research Institute, the Textile Institute of Great Britain, and the American Institute of Chemists.

Mr. Braden joined Cluett, Peabody & Co., Inc. in 1922, and was elected secretary in 1942. He also has been associated with E. O. Hand, vice president in charge of sales in the Sales Department. He will assume the combined responsibilities of Secretary and Treasurer.

• U. C. and C. Transfer

John H. Drexler has been transferred to the Boston office of Carbide and Carbon Chemicals Division, Union Carbide and Carbon Corporation as a technical representative. He was formerly with the Philadelphia district office.

Mr. Drexler has been with Carbide since 1940 except for service as a naval aviator in World War II. He is a graduate of Rutgers University.

• Knight Elected President

Arthur W. Knight was elected President and Treasurer of William Allen Son's Company of Worcester, Mass., April 20. He is the third president of the corporation in 78 years. Mr. Knight has been vice president and general manager since 1938. As president, he succeeds Walter B. Allen who died in January and was president for nearly 50 years.

William Allen Son's Company began in 1872 as a partnership to manufacture power boilers and heavy iron work. About 60 years ago the company entered the

textile machinery field manufacturing Allen kiers and other bleaching equipment. Soon after the turn of the century, the Franklin Process package dyeing equipment was developed at this plant under the direction of W. Allen Traver, who was the general manager. Mr. Traver, who is now president of the Franklin Process Company of Providence, R. I., is a grandson of the founder of William Allen Son's Company. The company now manufactures stainless steel bleaching and dyeing equipment for the textile and paper industries. The trade name Allen-Worcester is familiar throughout the United States, Canada and South America.

Other officers elected are Judge Walter D. Allen, another grandson of the founder, re-elected as clerk of the corporation, and Helen M. Knight, assistant treasurer. Bradley B. Gilman of Worcester was elected a director.

• Calco Appointments

Dr. William B. Hardy has been appointed a Sectional Director in the Chemical Research Department of the Calco Chemical Division of the American Cyanamid Co., Bound Brook, N. J., in charge of the entire research program in the field of vat dyes, it was announced recently by H. Z. Lecher, Calco Director of Research.

Dr. Hardy is a native of Bloomfield, Iowa, and received his university training at the University of Chicago, graduating with a B.S. degree in 1938 and receiving his Ph.D. degree in 1940. He joined the Calco research organization where he worked under the various sections, including Analytical and Organic. He was promoted a Group Leader and in this position he was primarily responsible for developing Calco's extensive new line of Soluble Vat Dyes.

Recent additions to the company's technical staff have also been announced.

Technical appointees to the Manufacturing Department include the following: H. M. Carleton, B.S. Che.E., Northwestern University, '47; P. B. Sheridan, B.S. Ch.E., Columbia, '49; W. H. McCammon, B.S. Ch.E., Purdue, '50; R. L. Kelley, A.B. Chem., Harvard, '50; G. L. Smith, B.A. Chem., Williams, '49; M. Papier, A.B. Chem., Upsala, '49; Chemical Engineering Department: G. Marlowe, Ph.D. Ch.E., M.I.T., '50; Process Development Department: S. Sepoci, B.S. Chem., Wisconsin, '49.

• Gill New Staley Technical Director

Appointment of Lowell O. Gill as technical director of A. E. Staley Manufacturing Co., corn and soybean processor, has been announced by A. E. Staley, Jr., president. The technical department engages in research and technical sales service work.

Mr. Gill, who has been assistant director since 1947 and with Staley's since 1915, succeeds Howard File, head of the company's research and technical program since 1919. The latter relinquished the directorship for reasons of health, but will continue to serve the company in a consulting capacity.

A graduate of both Millikin and Cornell universities, Mr. Gill joined the company staff as a research chemist. He formerly headed the company's control laboratory work and for many years has been in charge of the technical sales service program.

Mr. File was the first chemist employed by the Staley Company when it began operations in Decatur in 1912. He left the company in 1913, but returned in 1919 to supervise the expansion of the technical and research program. He was educated at Milliken University.

• Chilenskas Transferred

Robert L. Chilenskas, of Monsanto Chemical Company's Organic Chemicals Division, will be transferred to the company's Foreign Department, Marshall E. Young, department director, recently announced.

Mr. Chilenskas, now in the division's sales department, will join the Foreign Department's export sales section in St. Louis, Mo., about July 1.

• McKenna Transferred

General Aniline & Film Corporation has announced that on April 1, Charles F. McKenna, Jr. was transferred from the Central Sales Development Department to Antara Products. He is responsible for the sale of dimethyl chloracetal and will also handle the sale of butanediol.

Mr. McKenna joined General Aniline & Film in October, 1942 and has held various posts in the Development Department prior to his transfer to Antara.

• U. S. Finishing Co. Annual Meeting

At the Annual Meeting of the stockholders of The United States Finishing Company the following Board of Directors was elected: Tracy A. Adams, G. Wyman Carroll, Jr., Donald B. Derby, Donald M. Freeman, Robert J. Hull, John G. Martin, Jared J. Mowry, Ronald H. Ramsay, Edward C. Sterling, Frank S. Torgerson and George M. Williams.

At the Directors' meeting held immediately after the Annual Meeting, the following officers were elected: Donald B. Derby, *Chairman of the Board;* Tracy A. Adams, *President;* G. Wyman Carroll, Jr., *Treasurer;* Jared J. Mowry, *Vice-President & Res. Mgr., Hartsville Branch;* Royce N. Pharr, *Vice-President and Sales Manager;* Ralph D. Holt, *Assistant Treasurer;* Edward T. Richards, *Secretary;* Frederick C. Briden, *Assistant Secretary,* and Graham J. Smith, *Assistant Secretary.*

The following directors were elected to the Executive Committee: Donald B. Derby, *Chairman;* Tracy A. Adams, G. Wyman Carroll, Jr., Robert J. Hull, Ronold H. Ramsay.

• Morningstar-Paisley Announcements

Morningstar, Nicol, Inc., starch and dextrine manufacturers, New York, N. Y., and their subsidiary, Paisley Products, Inc., industrial adhesive manufacturers and sales division of the parent company, jointly announced the appointments of Oscar W. Westerlund and W. C. Brown as assistants to the General Sales Manager, Earl C. Lenz. Both men will make their headquarters at the Paisley Chicago plant.

Coincidentally with this announcement, the parent company reports the development of a greatly expanded line of corn, potato and tapioca dextrine products which has necessitated the expansion and broadening of their selling organization.

• Color Stripping Process License Granted

Alexander Smith & Sons Carpet Company, Yonkers 1, N. Y., has been granted exclusive license by Harris Research Laboratories of Washington, D. C., to install the new Harris color stripping process in all branches of the wool processing industry. Under the new method, called "Harristrip," used dyed wools are said to become "almost as good as new" with strength and resiliency unimpaired by the process of removing the existing dye colors.

Dr. Milton Harris, Head of Harris Research Laboratories which devised the new method, reports that all basic claims for the process have been allowed by the United States Patent Office.

According to Murray D. Ewing, Manager of Alexander Smith's Industrial Marketing Development Division, the carpet company has been using the new process for some time. Mr. Ewing reports that the new color strip method yields substantial savings in wool usage. Wools processed by "Harristrip" are not vulnerable to damage by subsequent dyeing and processing, it is said. It can change "old wool into new" in about one-half an hour through a rapid chemical process used with conventional mill stripping equipment.

Other companies utilizing the process would do so on a royalty basis, it is stated. Under such an agreement Alexan-

der Smith will handle installation and servicing of the process, including technical advice on dyeing.

Costs are about the same as those of other stripping processes, according to Mr. Ewing. He said that while wools generally are still being stripped by other processes and reused in the manufacture of woolen goods, these processes tend to limit usefulness through loss of resiliency. He further stated that because "Harristrip" does not affect the physical properties of wool and actually enhances the chemical characteristics, the new process will permit wider use of stripped wools in both carpet and wool textile manufacture.

• Nylon Anti-Static and Fiber Lubricant

The Atlantic Chemical Co., Inc., Centredale, R. I. and Paterson, N. J., has announced a new product, Atco Anti-Static N-30, for preventing the development of static electricity in fabrics such as nylon, acetate and wool.

These fibers reportedly tend to generate a high charge of static electricity when being processed and subjected to friction. Such electrical charges are said to give piece goods a tendency to attract lint and dust, give workers annoying shocks, make goods cling to machinery, boxes and tables. Thus, inspection, cutting and sewing garments become extremely difficult. In finished garments the tendency to cling spoils draping qualities. Atco Anti-Static is said to overcome these difficulties by completely eliminating the development of static electricity.

The product is padded on and dried into the fabric or yarn at concentrations ranging from .5% to 2% by weight.

Full details and product samples are available.

• New Vinyl Resin

Development of an easy-processing vinyl resin for use in the manufacture of draperies, upholstery, table coverings, and other plastic products has been announced by Naugatuck Chemical division, United States Rubber Company.

Known as Marvinol VR-20, the new resin is the second step in a long-range program to market a complete line of vinyl resins developed to meet the specialized requirements of the plastics industry.

Naugatuck Chemical is currently marketing Marvinol VR-10, a vinyl resin of high molecular weight, purity and fine particle size. Products based on Marvinol VR-10 reportedly exhibit good toughness, durability, heat and light stability.

In the calendering field, the new resin reportedly will eliminate or drastically reduce the need for copolymer processing-aid resins. Its use will permit lowering Banbury and calender temperatures 10 to 15 degrees below previous practice, the company states.

Extrusions of Marvinol VR-20 compounds are said to have shown excellent gloss at temperatures 10 to 20 degrees below those used with most proprietary resins and its gloss retention is reported good even with a high percentage of filler.

The resin may be handled on conventional vinyl-processing equipment with no special machinery needed for mixing, extruding, calendering or molding, it is claimed.

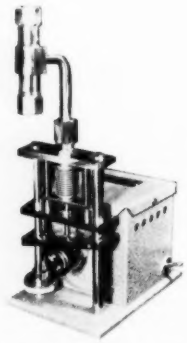
Production of Marvinol VR-20 is now underway at the Naugatuck Chemical division's plant in Painesville, Ohio.

• Micro-Bellows Pump

The Corson-Cerveny Micro-Bellows Pump has been put on the market by the Research Appliance Company, Box 413 West View Road, Pittsburgh 9, Pa.

Primarily developed for laboratory-scale pumping of materials which are liquid at room temperature, the product can also be adapted to pump low-boiling liquids such as pentane, melted solids (e.g., naphthalene) and viscous materials, it is stated.

The pump, of the pulsation type, is said to deliver a constant rate over long periods of time. The rate is reported to be variable depending upon the size of bellows and the adjustment nut. There is no packing gland or stuffing box, a feature helpful in eliminating dangers of contamination of product by lu ricants. The Type "C" Pump uses a stainless steel bellows which is electric welded to stainless steel fittings and attached to a stainless steel check assembly. All connections are reported to be machined fits requiring no compounds or gaskets. Overall dimensions are 6" x 3½" x 10⅜". Weight 5.6 lbs.



Type "C" Corson-Cerveny Micro-Bellows Pump

• New Heyden Products

Heyden Chemical Corporation, 393 Seventh Ave., New York 1, N. Y., is making available in pilot plant quantities a group of four diacetals of pentaerythritol. These new products, Pentaerythritol Diformal, Pentaerythritol Diacetal, Pentaerythritol Dipropional, and Pentaerythritol Dibutyral (n), are of interest to the research chemist as intermediates and also as compounds with interesting physical and chemical properties. Samples and technical literature are available on request.

• Stainless Steel Shovels

Stainless steel sanitary shovels, both scoop and square point types, are now being fabricated by Metalsmiths, 360, White Street, Orange, N. J. These shovels are reported to be completely stainless thruout, including blade, tubular handle and deep grip. To eliminate all lodging places that might trap materials handled, the hollow back of the shovel is fitted with stainless plate and closed; all crevices, rivet holes, etc., are filled; all welds ground smooth—polished all over.

• Polyamide Resin Suspensoids

An eight-page data sheet is available describing properties and suggested applications for General Mills' Polyamide Resin Suspensoids—new, specially prepared, cationic dispersions of Polyamide Resin in water. The Suspensoids are claimed to be outstanding as heat-sealable coatings for paper, metal foils, plastic films, cloth and leather.

Write to General Mills Research Laboratories, 2010 East Hennepin Avenue, Minneapolis 13, Minnesota.

• Pigment Discharge Colors

Introduction of a new line of pigment colors developed specifically for discharge printing is announced by Interchemical Corporation — Textile Colors Division, Fair Lawn, N. J. Known as Aridye ® Discharge Colors, these new products reportedly permit the production of bright shades comparable with "silk" colors in their brilliancy and clarity. Patterns printed with Aridye Discharge Colors are said to have good fastness to washing, drycleaning, perspiration, and light. The new colors are employed for printing rayon crepes, viscose rayon and Bemberg rayon sheers, spun rayons, and other fabrics. They are reported to provide fine, sharp marks and smooth prints with no impairment of hand.

Aridye Discharge Colors now available include two exceptionally brilliant blues,

a bright green, a vivid yellow, a bluish red, and a white which imparts additional brightness and opacity in printing light shades. These colors can be combined with one another in any proportions to produce a wide range of compound shades, including aquas, royals, turquoise and chartreuse, it is stated. It is further stated that Aridye Discharge Colors can be printed in conjunction with vat dyes and pigment whites to achieve color combinations which previously have been unobtainable.

These new discharge colors reportedly are applied in the form of a pigmented water-in-oil emulsion, containing sodium sulfoxylate formaldehyde in the aqueous phase. A special Aridye Discharge Clear has been developed for use in preparing the printing emulsions. Printing is carried out on a roller printing machine, after which the fabric is dried, padded through peroxide and Ludigol, dried, aged, washed, and dried in the usual manner for discharge printing.

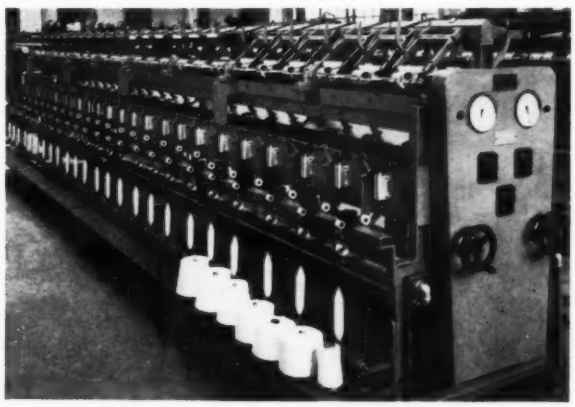
• Electric Singeing

Greater possibilities in use of electricity in various phases of singeing were exemplified in an electric yarn singeing machine, displayed at the recent American Textile Machinery Exhibit by American Textile Engineering, Inc., Arlington, N. J., American Representatives for Fr. Mettler's Sons, Arth, Switzerland. The latter company is a pioneer in the field of singeing of textiles in general.

A.T.E. feels that electric yarn singeing is a marked improvement over the older type gas method in such things as availability of electric power compared with gas, elimination of danger of explosion, absence of annoying and harmful fumes, savings of cleanings, etc.

Durability and uniformity of the company's new electric burners are reported to be economically guaranteed. It is stated that the singeing temperature on the yarn singer can be regulated by a small special transformer up to 2000°F. so that the singeing effect can be adapted to all requirements. The transformers can be connected to any alternating current of 220-500 volts, the company states. Ordinary consumption is reported at 200 watts per burner per hour.

The company, which also handles cloth-singeing frames, doubling frames and facilities for gas-making plants undertakes the rebuilding of singeing machines on electric or gas systems according to which gives lowest operating costs.



Fr. Mettlers' Sons Yarn Singeing Machine

• Vinyl Dispersions Series

The Watson-Standard Company, 225 Galveston Ave., Pittsburgh 19, Pa., has announced the development of a series of Vinyl dispersions for the glove manufacturer. These vinyl dispersions, known as vinyl plastisols, are 100% solids making them possible to use in the production of plastic coated gloves.

The coatings offer a tool for producing a highly economical, permanently flexible, wear resistant glove, the company states. They are easily applied by dipping operation and show good nonpenetration which results in the use of a minimum amount of plastisol to attain a high-quality piece of merchandise, it is claimed; furthermore, gloves coated with this material have a higher chemical and water resistance than latex or rubber coated gloves.

Complete information may be obtained from the manufacturer.

• Drip-Proof, Unbreakable 3-Gal. Pail

The new Ace-Hide three-gallon chemical pail, said to be practically indestructible, reportedly adds greater safety to the handling of virtually any type of corrosive solution. Ace-Hide, according to its makers, American Hard Rubber Company, 11 Mercer Street, New York 13, N. Y., is a new, tough, resilient, high-styrene, copolymer rubber that provides an excellent combination of light weight, corrosion resistance and strength.

"Ace-Hide" Chemical Pail

The pail will not chip or crack, it is reported, and because chemicals cannot penetrate the impervious surface the pail is easy to clean.

• Summer Textile Course

The United States Testing Company, Inc. will hold its 12th annual Refresher Course in Textiles and Testing Techniques, between July 17 and August 4, 1950. This year the course has been accredited by Teachers College, Columbia University, and graduates will be awarded 3 points of credit toward a degree.

This comprehensive course is open to those who have had some elementary textile training. Through lectures, demonstrations, and practice sessions, students will cover all phases of analyses on textiles and related merchandise, identification of fibers, dye chemistry, detergency, and research. Special emphasis will be given to the various textile processing and finishing techniques, with field trips planned for those students who are interested.

Enrollment in previous years has included representatives from all over the United States as well as from foreign countries.

The group is limited in number so that each member may receive individual instruction and opportunity to use equipment. A fee will be charged to cover the cost of supplies, literature and samples necessary for the laboratory work.

Classes will be in session from 9:00 A.M. to 4:00 P.M. For further information and application forms, write to Miss Dorothy McDonald, Consumer Service Division, United States Testing Company, Inc., 1415 Park Avenue, Hoboken, New Jersey.

• PTI Seniors Hear Work of T. R. I.

Dr. J. H. Dillon, Director of the Textile Research Institute, and two of his staff members, Dr. Jas. H. Wakelin and Dr. Helmut Wakeham talked to the Senior Seminar at the Philadelphia Textile Institute on March 21, 1950 and outlined the purposes and projects of T. R. I. Two of the projects receiving the most attention in this session were the studies of physical characteristics of wool & cotton.

The Textile Research Institute, pointed out Dr. Dillon, works on basic research which can be applied as needed by industry. Their work is supported by various organizations interested in the problems.

The use of I.B.M. machines to record data was discussed as a means of keeping compactly filed, all the information collected in the research problems.

These discussions of the procedure for basic research will be followed in other seminars by discussion of applied research and a research clinic.

• N.C.T.S.D. and Textile Foundation Meetings

The Spring Conference of the National Council of Textile School Deans, held at the Princeton Inn, Princeton, New Jersey, saw the election of Richard S. Cox, Dean of the Philadelphia Textile Institute as President, and George Walker, President of the New Bedford Textile Institute as Vice President. In recognition of his outstanding contributions to textile education, both in England and the United States, Professor William E. Morton of Manchester (England) College of Technology was elected an honorary member of the group.

Reports from the eleven textile schools showed a total enrollment of daytime students slightly exceeding 4000. About 1100 will be graduated this year.

The representative of each school reported on recent developments and progress in his institution. Among subjects discussed were the following: Better Cooperation With Industry in Order to More Fully Fit Students for Industry and Attain Greater Interest in School Graduates; Accreditation; Liberal Arts vs. Textile Technology; Preparation of and Sources of Supply for Textile School Teachers; Personnel Services—Responsibility for Student Welfare; Evaluating Services of Faculty Members; and Interinstitutional Cooperation and Coordination.

Following a group luncheon, at which H. Wickliffe Rose of the American Viscose Corp. addressed the group on research and education, the afternoon was spent at the Laboratories of the Textile Research Institute and Textile Foundation in Princeton. Dr. John H. Dillon, Director of Research, talked about the variety and number of projects being worked on at the Laboratory and also spoke enthusiastically of the Research Fellowship program under which 15 individuals spend part of their time at Princeton University Graduate School working for their doctor's degrees and part of their time on research projects in the laboratory building of the Institute and Foundation.

Following the adjournment of the meeting in Princeton the group went to Philadelphia to inspect the new building of the Philadelphia Textile Institute.

Those present, including guests, were Dean Hugh M. Brown of Clemson College Textile School, Dean Malcolm E. Campbell of North Carolina State College Textile School, Dean George H. Coleman of the Institute of Textile Technology, President Leslie B. Coombs of Bradford Durfee Technical Institute, Dean Herman A. Dickert and C. A. Jones of the A. French Textile School, Georgia Institute of Technology; W. D. Fales, Head of the Textile School at the Rhode Island School of Design; James C. Farrow of the Alabama Polytechnic Institute; Dr. F. M. Feiker, Dean, School of Engineering, The George Washington University, and Educational Consultant for the Textile Foundation; President Kenneth R. Fox and Dean G. Nathan Reed of Lowell Textile Institute; President A. C. Harper and Dean T. G. Stoudt of Wyomissing Polytechnic Institute; Director Bertrand W. Hayward and Dean Richard S. Cox of the Philadelphia Textile Institute; L. E. Parsons, Head of the Textile Engineering Dept. of the Texas Technological College; Edward T. Pickard, Secretary of the Textile Foundation; H. Wickliffe Rose of American Viscose Corporation; President George Walker of New Bedford Textile Institute; and representing the Philadelphia Textile Institute, Theodore B. Hayward, Percival Theel, Constantin Monego, Paul Siminuk, John Naab, John Dievers and John E. Turcotte.

Immediately following the Deans' Meeting the Board of Directors of the Textile Foundation met in Washington, D. C. for their twenty-first Annual Meeting. Present officers, Franklin W. Hobbs of Boston, Massachusetts, Chairman; Frank D. Cheney of Manchester, Connecticut, Treasurer; and Edward T. Pickard of Kent, Connecticut, Secretary, were re-elected.

Reports showing progress in the fields of scientific research, textile education and economic research were submitted and approved.

• L.E.T.S. Graduates 365

The Lowell Evening Textile School held its fifty-second graduation exercises on Tuesday, April 11, in Southwick Hall of the Lowell Textile Institute, Lowell, Mass.

Speaker of the evening was Arthur W. Brown, a member of the Institute's Board of Trustees and Greater-Lawrence area director for the Textile Workers Union of America, C.I.O.

A class of 365 students was congratulated by Kenneth R. Fox, President of the Institute, who sketched the history of the evening school and pointed out the need for education today in a world of rapidly changing technological improvements and inventions.

The students were also addressed by Professor Charles F. Edlund, director of the evening school who congratulated the graduates and outlined the objectives of the school and the place it has filled in Lowell and surrounding communities.

Mr. Brown, principal speaker at the impressive exercises addressed the graduates on the subject "Collective Bargaining and the Textile Industry". He noted the careers of several men who had attended the Lowell Evening Textile School and told of the success which they had attained as a result of study at the school.

The place of collective bargaining in industry was also discussed by Mr. Brown who contrasted present day harmonious bargaining conditions with the lack of cooperation between labor and management in the early years of the century.

Presentation of certificates was made by President Fox, assisted by Harold W. Leitch, Chairman of the Board of Trustees.

• Graduate Fellowships in Chemistry

Graduate fellowships in chemistry established at ten leading universities by United States Rubber Company have been renewed for the academic year 1950-51, according to an announcement by H. E. Humphreys, Jr., president.

The universities which have accepted the fellowships are: California Institute of Technology, Pasadena, California; Cornell University, Ithaca, New York; Harvard University, Cambridge, Massachusetts; Massachusetts Institute of Technology, Cambridge, Massachusetts; Northwestern University, Evanston, Illinois; University of California, Berkeley, California; University of California at Los Angeles, California; University of Chicago, Chicago, Illinois; University of Minnesota, Minneapolis, Minnesota; University of Wisconsin, Madison, Wisconsin.

The fellowships will be available for the academic year starting July 1. Under the terms suggested by the rubber company the fellow will receive $1,200 per year if single, $1,800 per year if married. The university will receive $1,-

000 to cover tuition and other costs.

At the same time, it was announced that a fellowship in physics at the University of Virginia had also been renewed for the coming academic year. This fellowship carries a stipend of $1,500.

The fellows will be selected by the universities in accordance with their established practices and will not be restricted in the choice of position after the expiration of their fellowship.

This is the fourth year that the fellowships have been sponsored by the company.

• LTI Summer Session

The Lowell Textile Institute's first formal summer session offering college credit and college entrance credit courses in mathematics, physics and chemistry will open on Monday, July 10 and continue through Friday, August 18, it has been announced by Kenneth R. Fox, President of the Institute.

Supervised by Professor John R. Robertson, the newly inaugurated six week intensive session will be conducted by members of the regular teaching personnel.

Registration will be held on Thursday, July 6, and Fraiday, July 7, and dormitory and cafeteria facilities at the Institute will be available to participants.

• N. E. Industrial Wastes Conference

The New England Industrial Wastes Conference, June 26-28, will be a feature of the 1950 Summer Session at the Massachusetts Institute of Technology.

The M.I.T. Department of Civil and Sanitary Engineering will be joined in sponsoring the event by the New England Council and the New England Sewage Works Association. Professors Rolf Eliassen and Clair N. Sawyer represent the M.I.T. sanitary engineering laboratories on the committee in charge of the conference.

Professor Walter H. Gale, Director of the M.I.T. Summer Session, described the conference as part of a broad series of summer activities scheduled at M.I.T. during 1950 to make the Institute's special facilities available to those in industry and technology who connot participate in its regular program.

The Industrial Wastes Conference, according to Professor Eliassen, will be designed to bring together these three groups for discussion of water pollution and control problems:

1. Industrialists, representing management, chemical engineers, and sanitary engineers.

2. Representatives of stream pollution and water control agencies, including federal, regional, and state.

3. Research workers and consulting engineers concerned with industrial wastes and water supply problems.

In addition to general discussions of pollution abatement from the viewpoints of industry, control agencies, and municipalities, there will be symposia on the water and waste problems of specific New England industries, including *wool scouring*, and *cotton and wool dyeing and finishing*.

A special symposium on future needs and developments will conclude the three-day gathering.

• Soap and Detergent Section, CSMA Program

The program of the Soap and Detergent Section of the Chemical Specialty Manufacturers' Assn. will be held June 11, 12 and 13 at the Drake Hotel, Chicago. The schedule of events follows:

Sunday, June 11—6:30 P.M. Supper meeting.

Monday, June 12—2:30 P.M. Round table discussion and symposium on *Fatty Acids.* Moderator: A. Peck.

Tuesday, June 13—9:15 A.M. Technical session. This will include the following papers: Melvin Fuld (Fuld Bros.) "Foam Measurement", Edwin Stearns (Amer. Cyanamid) "Optical Bleaches in Soaps and Detergents", Jay Harris (Monsanto) "Evaluation of Paint and Linoleum Cleaners", J. E. Kircher (Sharples Continental) "Sulfonation of Alkyl Aryls" and Martin J. Cross (General Dyestuff) "Recent Developments in Nonionic Surface Active Agents."

Tuesday, June 13—3:00 P.M. Business meeting.

• New English Dyers Journal

The Huddersfield Local Centre of the Guild of Technical Dyers, Yorkshire, England, is now publishing annually a journal called "The Cobbler" featuring articles and notes of interest to its members as well as all students and dyers of wool fiber.

The second edition includes the following articles: "The Possibilities of Rayon in the Woolen Industry" by Dr. C. M. Whitaker, "The pH Control of Bulk Dyeing" by G. H. Lister," From Loom to the Public with Emphasis on Cloth Analysis" by C. Mayland, "Faults in Wool Textiles" by F. F. Elsworth, "The Finishing of Woolen and Worsted Fabrics" by C. S. Whewell, and "Carpet aand Rug Dyeing" by B. Kramrisch.

All communications regarding "The Cobbler" should be addressed to P. Duckworth, 359 Blackmoorfoot Rd., Crosland Moor, Huddersfield, Yorkshire, England or to P. Huddlestone, 105 Birchencliffe Hill Rd., Birchencliffe, Huddersfield, Yorkshire, England.

• Koppers Bulletin on Resorcinol

The Chemical Division of Koppers Company, Inc., Pittsburgh 19, Pa., has issued a 40-page technical bulletin describing the physical and chemical nature, the uses, and chemical reactions of Koppers Resorcinol.

It describes the use of Resorcinol to increase the adhesion between rubber and textiles and in the preparation of dyestuffs, explosives and pharmaceuticals. The chemical's use in the preparation of cosmetics, fur dyes and treatments, paints and varnishes, plastics stabilizers and plasticizers, synthetic resin adhesives, tanning agents, thermosetting plastics, and as an analytical reagent or as an antioxidant also are discussed.

Chemical reactions of Resorcinol which are typical of phenols and those peculiar to Resorcinol are discussed and diagrammed.

Technical information in the bulletin includes physical properties, crystallographic, spectral, and thermodynamic data, as well as data on the chemical's solubility in common liquids.

The bulletin offers commercial information on Resorcinol pertaining to grades available, containers, and handling and storage. A short discussion of the toxicity of Resorcinol also has been included.

Completing the new technical bulletin on Resorcinol is an 11-page bibliography of technical, patent, and general references. Copies of the bulletin may be obtained by requesting Technical Bulletin C-9-124.

• Fletcher Anniversary Brochure

Fletcher Works, Inc., Glenwood Avenue and Second Street, Philadelphia 40, Pa., manufacturer of narrow fabric looms, textile extractors, chemical centrifugals and throwing machinery have published a brochure on the 100th Anniversary of their founding. The brochure gives a brief resume of their history, personnel and products. Copies are available upon request.

• Fatty Acid Catalog

A new 24-page fatty acid specification catalog has just been made available by W. C. Hardesty Co., Inc., 41 E. 42nd St., New York 17, N. Y. The catalog lists specifications and shipping data on a complete line of fatty acids which include stearic acid, red oil, animal and vegetable and fish oil fatty acid, stearine pitch and glycerine. Also included are three data charts showing composition of fats and oils, color standards comparator and temperature conversion tables.

• Monsanto Technical Bulletin

A low-cost chemical composition for imparting fire retardant properties to all types of cellulosic fabrics is described in a technical bulletin prepared by Monsanto Chemical Company, St. Louis 4, Mo.

Fabrics treated with the composition, called Monsanto Fire Retardant B, satisfactorily fulfill flame resistant requirements of Army Quartermaster Specifications JQD-242, Federal Specifications KKL-136B, National Bureau of Standards Commercial Standard CS-129-46, and the Pyrolysis test, the company states.

The ten-page bulletin contains explanation of what the composition does, what it is, and suggestions for its application.

• Tennessee Eastman Catalog

Tennessee Eastman Corporation, Kingsport, Tenn., announces the publication of the "Eastman Industrial Chemicals" catalog for 1950. The new edition offers a compact description of the many chemicals which the corporation offers to industry. Specifications, properties, and typical uses of these chemicals are included.

Listed in the catalog are aliphatic acids and anhydrides, alcohols, aldehydes, plasticizers and solvents; aromatic amines, aminophenols, phenols and phenol ethers; cellulose products; inorganic chemicals; and miscellaneous chemicals such as aluminum isopropoxide, p-benzo-quinone, etc.

• O.T.S. Subject Index

A subject index to technological documents issued in Volume XI of the *Bibliography of Scientific and Industrial Reports* (presently known as the Bibliography of Technical Reports) is now available to the public, the Office of Technical Services of the U. S. Department of Commerce has announced.

The new index enables researchers to locate reports on any subject carried by the *Bibliography* in the period January-June 1949. Subject headings are said to be comprehensive and include trade names where appropriate.

Copies of the Index may be purchased from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., at $2 per copy. Check or money order should be made payable to the Treasurer of the United States.

The index to Volume X may be purchased from the O. T. S. at $1.

The Bibliography of Technical Reports, now issued monthly, lists additions to the O. T. S. collection of foreign and domestic technical reports. The collection now totals some 150,000 items. Information on the contents of the collection in any particular field also may be secured by writing to the above address.

OBITUARY

FREDERICK T. PEIRCE

DR. FREDERICK T. PEIRCE, for several years director of research in the School of Textiles at N. C. State College, died in Sydney, Australia, on Tuesday, April 11.

Dr. Peirce joined the State College staff in the spring of 1945 and remained on the faculty until the fall of 1948 when he resigned because of illness. Following his resignation, he returned to his native Australia.

Prior to accepting the appointment at the college, he served for 24 years as head of the testing department of the Shirley Institute of England, the world's largest and oldest textile research organization.

For two years he undertook post-graduate research on X-ray crystallography, under Sir William Bragg, at University College, London, where he also lectured in physics. He was a fellow of the Institute of Physics, the Textile Institute, and the Royal Society of Arts.

He was a veteran of the Australian Army during World War I and was responsible during World War II for the development of a number of outstanding textile products, including cotton fire hose and "Shirley cloth" for raincoats used by both the British and U. S. Armies.

He was the author of about 40 significant textile publications dealing with various research accomplishments and wrote more than 10,000 special reports and confidential memoirs to the British textile mills, government departments, and users of textiles.

In his capacity at State College, Dr. Peirce developed and directed the program of fundamental and applied research in the School of Textiles, with particular emphasis on new fabric development. He also lectured to students in fiber properties, textile testing, and mechanical fabric design, both at the graduate and undergraduate levels.

L. D. HOLLAND

THE death of L. D. Holland, Assistant to the President and a member of the Board of Directors of E. F. Houghton & Co., Philadelphia, occurred on April 14 after a long illness. He was 46, and had been connected with Houghton since 1927 as sales representative, Western Division Sales Manager, Manager of Research Sales and Assistant General Sales Manager. Educated at Coe College, Iowa, he was married in 1926 and is survived by his widow and two daughters, also by three brothers, T. L. Holland, Cleveland, Ohio; W. L. Holland, Atlanta, Ga. and Lee Holland, Washington, Iowa.

ARTHUR O. JOHNSON

ARTHUR O. JOHNSON, Manager of the Providence, R. I. office of Geigy Company, Inc., died on April 16, 1950, in Providence. Mr. Johnson was in his 55th year.

After some years as a dyehouse technician, Mr. Johnson joined the Geigy organization May 1, 1923 as salesman and demonstrator in the company's Philadelphia office. Later he was transferred to the Providence office and succeeded to the managership of that office upon the retirement of Ernest A. Sherburne.

Mr. Johnson is survived by his widow, Elizabeth Snell Johnson, one daughter and two grandchildren.

HERBERT M. KAUFMANN

DR. HERBERT M. KAUFMAN, Chairman of the Board of Directors of Mutual Chemical Company of America, died in New York Monday, March 20th, at his home after a short illness. He was in his eightieth year.

Born in Philadelphia in 1870, he was graduated as a chemist at the age of eighteen from the University of Pennsylvania. He continued his studies abroad at Swiss Polytech, Zurich, and obtained his doctorate in chemistry in 1891 from the University of Basle. He moved to New York City in 1909.

In 1896, he joined the Mutual Chemical Company of Jersey City as chemist, superintendent and works manager. In 1908, that company, which was then a major factor in the chromium chemical industry, and the American Chrome Company were merged to form the present Mutual Chemical Company of America. Dr. Kaufman was its President from 1933 to 1943 and the Chairman of its Board of Directors since then.

He was a member of the Advisory Committee of the 42nd Street Branch of the Chase National Bank and served as a Director of the Phosphate Mining Company up until the time that company was sold to Virginia Carolina Chemical Company. For many years he was a Trustee of the Free Synagogue and Treasurer of the Jewish Institute of Religion, both institutions founded by the late Dr. Stephen S. Wise. He was a member of the Harmonie and Chemists' Club.

Dr. Kaufmann is survived by his widow and six grandchildren. A son, Herbert J., died in 1945.

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No. 14 of a series

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Calcocid Milling Fast Green CR is a good working dye, retaining its bright shade when used in combination with chrome dyes applied by either the meta or topchrome methods. It produces brilliant green shades which are generally unobtainable with other dyes.

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For the Textile Bookshelf

Calco Technical Bulletin No. 807—"Studies On Wool Dyeing: Effect of Metals on Tippy Dyeing" by Henry E. Millson. Discusses problems encountered in dyeing wool with chrome colors, particularly shade changes when a dye capable of metallization is reacted with different metals; also discusses influence of impurities in plant water on shade variations.

Revised-Calco Technical Bulletin No. 761—"Descriptive Index of Calco Technical Bulletins"—abstracts all bulletins published to date. Helpful cross-index. Send for your copy.

Calco Technical Bulletin No. 777—"Coloring With Resin-Bonded Pigments" offers a complete description of the methods recommended for applying Calcotex Resin-Bonded Pigments on cottons. Contains historical and general background material; also several full color pages illustrating the beautiful color effects possible with Calcotex colors on cotton percale, flannelettes, plissé, sportswear, shirting and specialty items.

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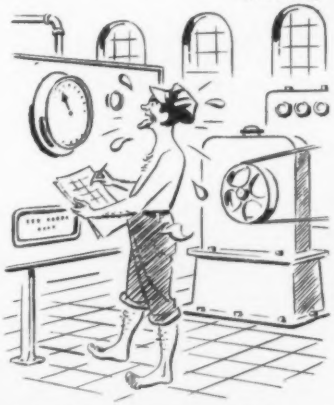

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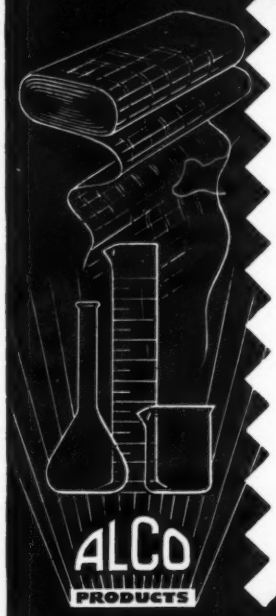

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IMPORTANT ANNOUNCEMENT

At the request of the . . .
A.A.T.C.C. Convention Committee,
the SEPTEMBER 4, 1950, issue of
American Dyestuff Reporter will be
the A.A.T.C.C. CONVENTION ISSUE
instead of the September 18th issue
as previously planned and announced.

•

The deadline for this Important Issue
is August 14th for copy to be set
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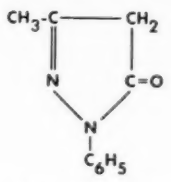

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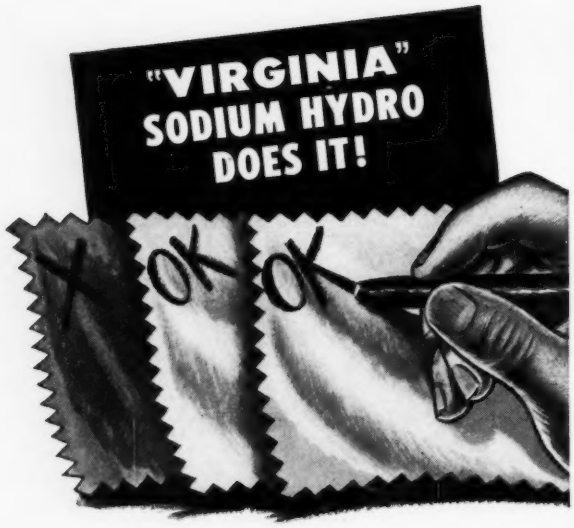

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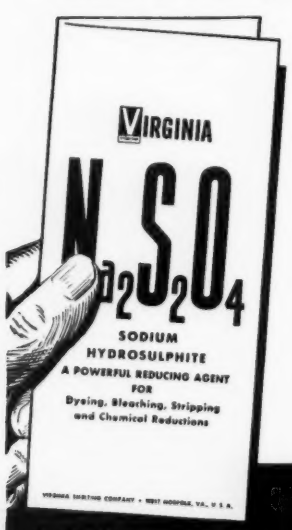

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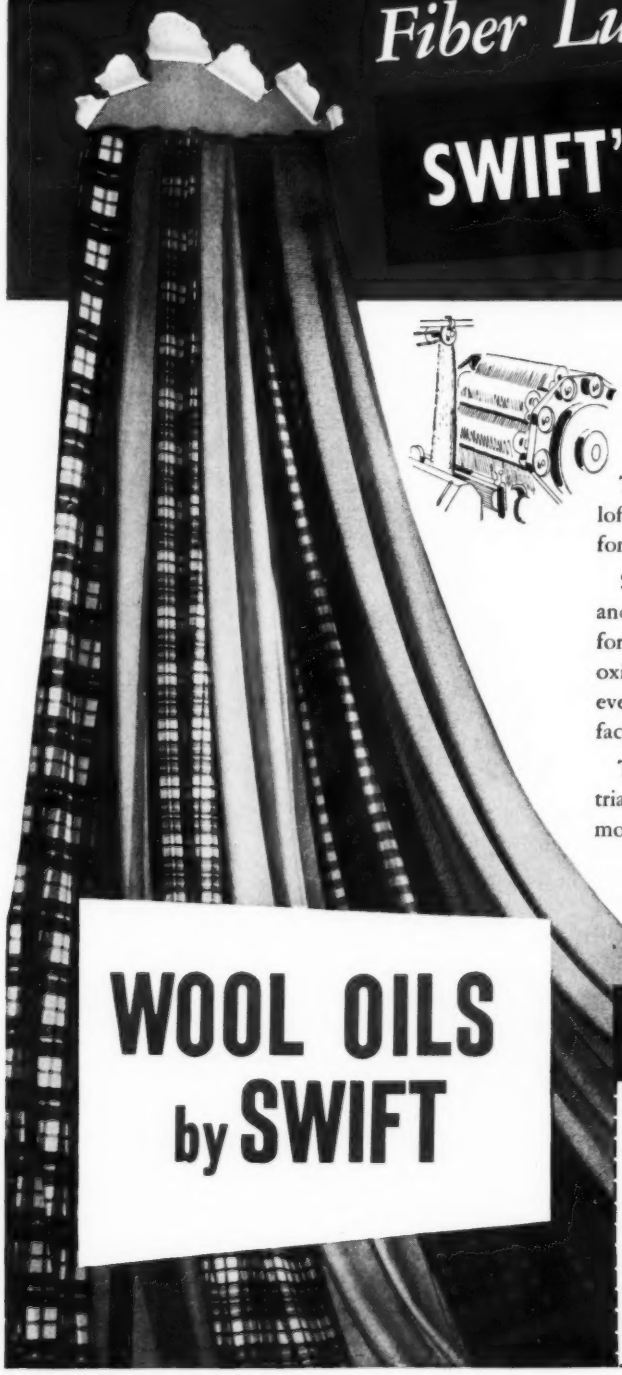

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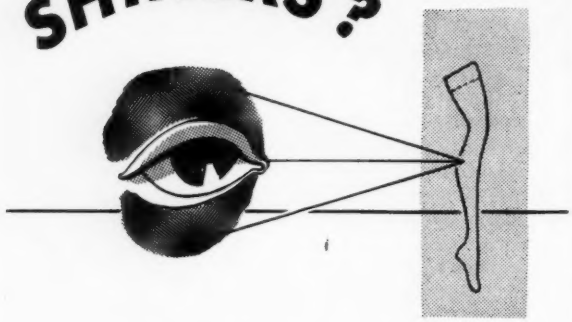

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